Re: FW: World Kitchens Site

Kenneth Bardo to: Cornuet, Thomas 07/27/2010 04:10 PM

Cc: "Flasinski, Greg J.", "Landry, Paul G.", "Schuyler, Stephen", "McFarland, T.J.", "Cornuet, Thomas"

From: Kenneth Bardo/R5/USEPA/US
To: "Cornuet, Thomas" <Tom.Cornuet@WestonSolutions.com>
Cc: "Flasinski, Greg J." <Greg.Flasinski@WestonSolutions.com>, "Landry, Paul G." <P.Landry@WestonSolutions.com>, "Schuyler, Stephen" <S.Schuyler@WestonSolutions.com>, "McFarland, T.J."

Tom, thanks for the update proposing the additional work for the North Area SVE system at the World Kitchen site in Massillon, Ohio. Applying a vacuum to well W-10 and installing deeper SVE wells close to well W-10 seems like a good approach for trying to extract additional VOCs from potential source areas within the unsaturated deposits. If these additions to the North Area SVE system are productive enough to increase the pounds of VOCs removed per year to significantly greater than the one ton per year "de minimis" permit exemption, EPA recommends that remediation continue to be performed and that the GAC units be reinstalled on the SVE system. Please let us know the results of the project. Thanks, Ken

"Cornuet, Thomas" Hi Ken. I am providing an additional update to o... 07/13/2010 05:02:01 PM

From: "Cornuet, Thomas" <Tom.Cornuet@WestonSolutions.com>
To: Kenneth Bardo/R5/USEPA/US@EPA
Cc: "Schuyler, Stephen" <S.Schuyler@WestonSolutions.com>, "Cornuet, Thomas" <Tom.Cornuet@WestonSolutions.com>, "McFarland, T.J." <TJ.McFarland@WestonSolutions.com>, "Flasinski, Greg J." <Greg.Flasinski@WestonSolutions.com>, "Landry, Paul G." <P.Landry@WestonSolutions.com>
Date: 07/13/2010 05:02 PM
Subject: FW: World Kitchens Site

Hi Ken.

I am providing an additional update to our previous phone conversation on the Former WKI facility project in Massillon, Ohio. We are tentatively scheduled to initiate the first phase of our modifications to the existing North Area Soil Vapor Extraction (SVE) system next week. As you may recall, the current North Area system consists of 13 shallow SVE wells completed to a maximum depth of approximately 19 feet below ground surface (bgs). I have attached a site map and a drawing of the North area SVE layout for your reference. The sub-slab air is extracted using a blower system, which is housed in a small shed. This air is discharged to the atmosphere under the "De Minimis" permit exemption (OAC Rule 3745-15-05(B)). We utilize SUMA and PID sampling to document that the ongoing system operation complies with the emission requirements of less than 10 pounds per day of organic compounds and one ton per year of hazardous air pollutants. These data are reported to the U.S. EPA Region 5 in our semi-annual project status reports. A summary of the annual VOCs removed by the system is shown below.

Year	lbs. of VOC's removed
2009	518.90
2008	245.20
2007*	451.30

2006	528.80
2005	940.00
2004	11,073.30
2003	6,800.00

*Carbon units removed from the SVE system on January 17, 2006

The GAC treatment, which was originally used to treat the effluent from 2003 through 2006, was removed from the system in January 2007. As shown by the table, the extracted VOC mass has been below 1,000 pounds per year since 2005.

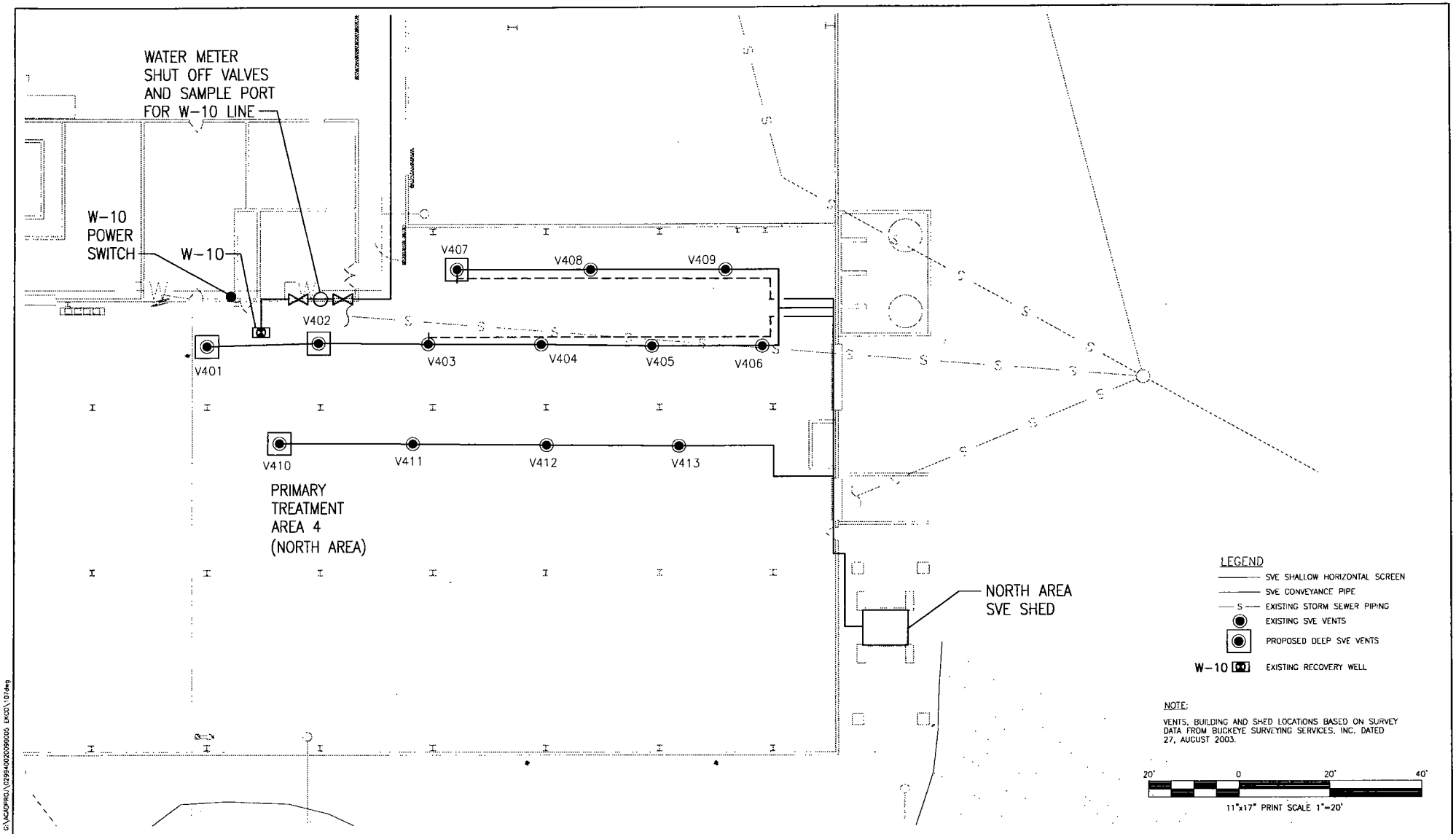
The first phase of our SVE System modification simply consists of applying a vacuum to the deep groundwater extraction well W-10, utilizing the existing blower system that is currently connected to the 13 shallow extraction wells. The second phase, which is currently scheduled for late July or early August, will consist of installing deeper SVE wells at 4 of the current 13 shallow well locations which are located closest to well W-10 (V401, V402, V401, and V410). The 4 new deeper wells will serve to replace the existing shallow wells at those locations and the total depth of the deeper wells is currently planned to be approximately 40 feet below ground surface. The final well depths may vary some based on field screening data collected during well installation. The 4 new deeper wells will be connected to the existing SVE blower system using the same blower and conveyance piping that the shallow wells currently use.

We plan to continue to monitor and manage the extracted VOCs to maintain compliance with the permit exemption requirements during and after the planned system modifications. If the initial post-modification sample results are elevated, we will manage the VOC discharge by either limiting the operation time, reducing the extracted air flow rate, or if necessary redeploying GAC units onto the site. We would notify the Canton Health Department prior to redeploying GAC units to the site. Our operational data will continue to be kept in the project file and submitted to the U.S. EPA Region 5 in the semi-annual project status reports. The overall objective of these system modifications is to enhance the current SVE system and accelerate the VOC mass removal which should reduce the total operation time of the soil and groundwater remediation systems operating onsite. Please let us know if you have any questions or need anything else. I am scheduled to be traveling for a couple of days beginning tomorrow afternoon but you should be able to reach me periodically on my cell phone at 484.459.0620. I will also try to check my email at night. Please also reply to everyone on the email CC list with any questions you have so that we can respond to you as quickly as possible. Your ongoing support and assistance with this project over the years is greatly appreciated.

Thanks Ken.

Tom Cornuet, PG
Weston Solutions, Inc.
1400 Weston Way
West Chester, PA 19380
610.701.3776 Fax: 610.701.3401
Welcome to Weston Solutions, Inc.

information without the written permission of Weston Solutions, Inc. is strictly prohibited. If you received this email in error, please notify the sender by return e-mail and delete this email from your system. Thank you. [attachment "108 NORTH AREA SVE SYSTEM.pdf" deleted by Kenneth Bardo/R5/USEPA/US] [attachment "107 REMEDIATION PLAN.pdf" deleted by Kenneth Bardo/R5/USEPA/US]



FILE NO. G:\AGPROJ\02994002\09005 EXCV\101.dwg

NO	DATE	APPR.	REVISION

WORLD KITCHEN, INC.
MASSILLON, OHIO FACILITY
Prepared for Wyeth, Madison, New Jersey

WESTON
WEST CHESTER PENNSYLVANIA

CHECKED	DATE	CLIENT APPROVALS	DATE
DES. ENG.			
PROJ. ENG.			
PROJ. MGR.			
APPROVED			
APPROVED			

NORTH AREA SVE SYSTEM ENHANCED REMEDIATION PLAN

DRAWN	DATE	DWG. NO	REV. NO
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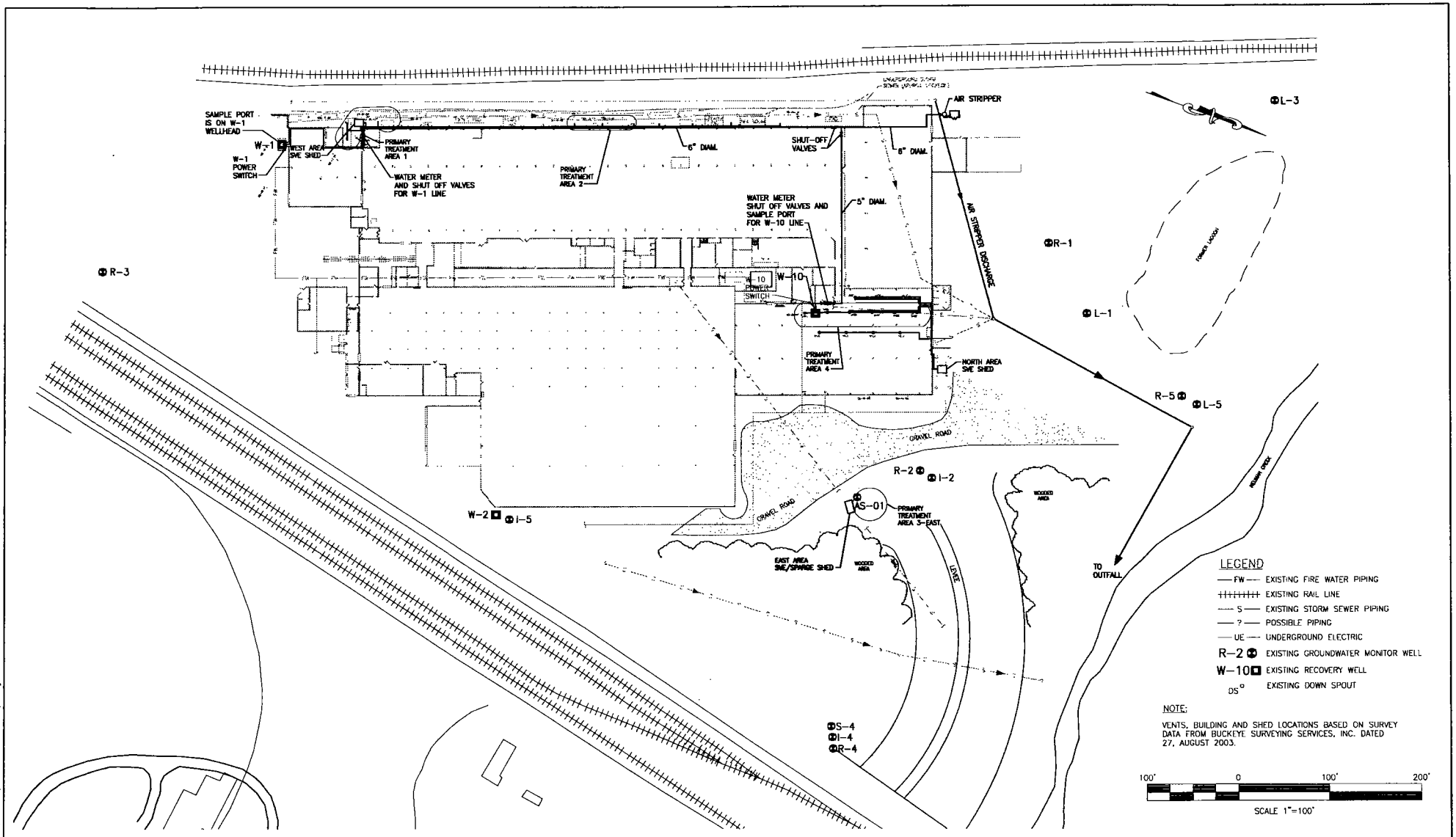

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NO	DATE	APPR	REVISION

WORLD KITCHEN, INC.
MASSILLON, OHIO FACILITY
Prepared for Wyeth, Madison, New Jersey

WESTON SOLUTIONS
WEST CHESTER PENNSYLVANIA

CHK'D	DATE	CLIENT APPROVALS	DATE
DES. ENG.			
PROJ. ENG.			
PROJ. MGR.			
APPROVED			
APPROVED			

ENHANCED REMEDIATION PLAN

DRAWN	DATE	DWG. NO.	REV. NO.
D.BARNES	2/23/10	107	A
SCALE 1"=100'	W.O. NO. 02994002013000	SHT ___ OF ___	

Kenneth Bardo/R5/USEPA/US
06/20/2006 03:47 PM

To bassom@wyeth.com, tom.cornuet@westonsolutions.com
cc
bcc

Subject Fw: Indoor air assessment of former EKCO facility

Tom - Our risk assessor reviewed the "Indoor air assessment for former EKCO facility in Massillon, Ohio" dated June 12, 2006, and noted a few discrepancies in the calculations. Modifications were made and the indoor air risk was re-calculated.

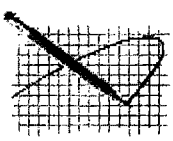
The soil type default parameter used in the calculations was for a clay loam. We evaluated the logs for soil borings SB-04-00, SB-05-00, SB-06-00, SB-11-00, SB-12-00, SB-13-00, and SB-14-00 located in the SVE north area and determined that the upper 5-feet of soils in this area are more appropriately identified as highly varaiable, consisting of sand and gravel fill, sand, silt, and clay. As identified below, in our calculations we used the soil types at SB-13-00 where the highest concentrations of TCE were detected. This calculation resulted in an incremental risk from vapor intrusion to indoor air for TCE of 6.0E-6.

Based on North Area air sampling from 1/23/06, additional VOCs were also detected but not included in the June 12, 2006, assessment. They include 1,1,1-trichloroethane, 1,1-dichloroethane, and cis-1,2-dichloroethene. The hazard quotients for these non-carcinogens were calculated by EPA as shown below.

Modified calculations performed by EPA show that the indoor air concentration of TCE in the main building of the facility does not pose significant risk to indoor workers under the current conditions. Additionally, the hazard index for all noncarcinogens combined is significantly less than the acceptable limit of one.

These calculations will be placed in the Administrative Record to supplement your June 12, 2006, assessment. - Ken

----- Forwarded by Kenneth Bardo/R5/USEPA/US on 06/20/2006 02:51 PM -----



Bhooma Sundar/R5/USEPA/US
06/20/2006 02:39 PM

To

Subject Indoor air assessment of former EKCO facility

Ken,

I reviewed Indoor air assessment for former Ekco facility in massillon, Ohio. The report discusses the application of J and E model in evaluating the risk associated with the indoor vapor intrusion of soil gas TCE into the main building of the former Ekco facility. Indoor air spreadsheet model (advanced) however is not attached to this report. Further report focusses only on the indoor intrusion of TCE when other chlorinated volatiles such as 1,1-DCE, 1,1-DCA, cis 1,2 DCE and 1,1,1- TCA was detected in the soil gas. Since the soil boring log was not provided along with the report it is difficult to cross check the assumptions used in J and E model. Although the report mentioned that the predominant soil type is clay loam, Soil boring log SB-04 through SB13 that you provided indicate a mixture of gravel sand at the top and clayey silt at the bottom. To address all these defeciencies and to calculate the cumulative risk I ran the J and E advanced soil gas model using the assumptions indicated in the report. I am attaching the spread sheet model that calculated the risk and HQ for TCE. The hazardous quotients for other noncarcinogenic chemicals can be calculated by simply substituting the chemical name and conc of TCE. In this model I assumed top 2.5 ft to be of sand gravel and bottom 2.5ft to be clayey silt.

Using the provisional TCE toxicity data, the overall risk due to vapor intrusion of soil gas in to the main building of former Ecko facility is calculated to be:

Chemical Name	Excess cancer risk	Hazard Quotient
TCE	6.0E-6	3.8E-3
1,1,1 TCA		1.9E-4
1,1 DCA		5.1E-05
cis 1,2 DCE		5.2E-04

Thus it can be concluded that the indoor air concentration of TCE in the main building of the facility does not pose significant risk to the indoor workers under the current conditions. The hazard index of all the noncarcinogens combined is significantly less compared to an acceptable limit of one.

Bhooma Sundar, Ph.D, MPH
Toxicologist/Project Manager
RCRA Corrective Action
Mail Code: DE-9J
USEPA Region 5
77, W.Jackson Blvd, Chicago, IL 60604
Tel: 312-886-1660
Fax: 312-353-4342

SG-ADV-world kitchenTCE.xls.

DAT[redacted]SHEET

SG-AB-1
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016			2.10E+00	Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
0	152	10	75	77	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	SiCL	1.37	0.482	0.198				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	6700	3654	761	0.1	0.8	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	25	25	250

END

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
6.0E-06	3.8E-03

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

INTERMEDIAT[redacted]ULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
7.88E+08	152	0.321	0.284	ERROR	0.003	9.92E-08	0.998	9.91E-08	20,708	1.19E+04	4.14E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.45E+07	8.46E-05	0	8,557	4.78E-03	2.06E-01	1.75E-04	1.28E-02	5.14E-03	0.00E+00	7.29E-03	152

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
0	1.19E+04	0.10	8.33E+01	1.28E-02	2.07E+03	4.84E+13	1.88E-05	2.23E-01	1.1E-04	4.0E-02

END

DAT[redacted] SHEET

SG-A[redacted]
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71556			5.80E+00	1,1,1-Trichloroethane

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
0	152	10	75	77	0	S		

MORE

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	SICL	1.37	0.482	0.198				

MORE

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	6700	3654	761	0.1	0.8	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	25	25	250

END

RE[redacted]HEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.9E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

Weston Solutions, Inc.
1400 Weston Way
P.O. Box 2653
West Chester, Pennsylvania 19380
610-701-3000 • Fax 610-701-3186
www.westonsolutions.com

June 12, 2006

Mr. Kenneth Bardo
Project Manager
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

Re: Indoor air assessment for former Ekco facility in Massillon, Ohio

Dear Ken:

Weston Solutions, Inc. has performed an evaluation of the potential impact of the remaining subsurface soil contamination on indoor air quality within the main building of the former EKCO facility in Massillon, Ohio using recent trichloroethylene (TCE) soil gas data collected from the north area soil vapor extraction (SVE) system. TCE concentrations in soil gas samples collected from the north area SVE system in 2006 have ranged from 1.1 parts per million by volume (ppmv) (collected on February 17, 2006) to 2.1 ppmv (collected on January 23, 2006). The analysis was performed in accordance with the *United States Environmental Protection Agency (U.S. EPA) Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, November 2002.* The EPA guidance provides a tiered approach for identifying subsurface soil contaminants that may pose a risk to workers inside the main building via the vapor intrusion to indoor air pathway.

U.S. EPA's vapor intrusion guidance was developed to address concerns raised about the potential for subsurface contamination in either soil or groundwater to adversely impact indoor air quality. In response to this concern, EPA in 1998 developed a series of spreadsheets (and User's Guide) that allow for site-specific application of the Johnson and Ettinger Model (1991). Since that time, revisions to the models have been made and a series of new models (Version 3.1; February 2004) have been added to U.S. EPA's website. The spreadsheets and accompanying user's guide were used to perform the risk-based analysis for TCE.

The soil vapor to indoor air spreadsheet model consists of two separate workbooks in Microsoft® Excel. One workbook provides screening-level results (SG-SCREEN-Feb04.xls) while the other workbook provides more flexibility for calculating site-specific results (SG-ADV-Feb04.xls). Both the screening-level model and the advanced model allow the user to calculate risk-based screening levels (RBSLs) or incremental risks from an actual starting concentration in soil gas. Data entry within the screening-level model is limited to the most sensitive model parameters and incorporates only one soil stratum above the contamination. The advanced model provides the user with the ability to enter data for all of the model parameters

and also incorporate up to three individual soil strata above the contamination for which soil properties may be varied. The advanced model was used in this evaluation to more accurately represent the site-specific building parameters (e.g., floor length and width) associated with the former EKCO facility's main building.

Soil gas to indoor air modeling was performed based on exposure to industrial workers at the site. The maximum detected soil gas concentration collected from the north area SVE system in 2006 was used as the source concentration in the modeling. For the industrial worker, an annual exposure frequency to indoor air of 250 days per year was assumed along with an exposure duration of 25 years, which is conservative. Based on a review of boring logs generated for groundwater wells and soil borings established at the site, the predominant soil type is clay loam. As such, all soil gas to indoor air modeling was conducted using the default parameters associated with the clay loam soil type. The soil gas sampling depth used in the model was 5 feet below ground surface (bgs).

The entire EKCO facility is very large spanning over three acres in size. The main building located on the north end of the facility and near the north area SVE system has been used for storage and manufacturing with ceiling heights ranging from 20 to 30 feet. The former office area (note that there are no current office workers) is located on the opposite side of the facility in the southeast corner. There is no office space associated with the main building on the north end of the facility. As discussed in the paragraph below, vapor intrusion modeling has been conducted based on the building parameters associated with the main building located on the north end of the facility and in the vicinity of the north area SVE system.

The EKCO facility is built on a concrete slab. As such, default parameters associated with slab-on-grade construction (i.e., 15 centimeters for slab thickness) were used in the modeling. For the site-specific evaluation, the enclosed space floor length and width was specified as 220 feet by 120 feet based on the dimensions of main building which is located above TCE impacted soils and in the vicinity of the north area SVE system. In addition, the enclosed space ceiling height was specified to be 25 feet. The use of these building dimensions is considered conservative as the entire facility spans over three acres. The indoor air exchange rate was specified to be 0.8 exchanges per hour, based on the ASTM-specified parameter of 0.00023 exchanges/second for commercial/industrial buildings (*Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites*. ASTM Designation E 1739-95 [Approved 2002]). This is more appropriate than the default value, which is based on a residential building.

U.S. EPA's vapor intrusion spreadsheets include toxicity and chemical/physical parameter databases for 108 compounds. EPA's Integrated Risk Information System (IRIS) currently does not have a recommended inhalation unit risk factor (URF) or reference concentration (RfC) for TCE. For TCE, the Ohio EPA uses toxicity values established by the California EPA (Cal/EPA) to determine the cancer risk for TCE. However, in this assessment, TCE cleanup levels were estimated using toxicity data recommended by both EPA's National Center for Environmental

Assessment (NCEA) and Cal/EPA. Note, EPA's current NCEA recommended TCE slope factor of 0.4 $(mg/kg\text{-}d)^{-1}$ is about 57 times more potent—and therefore more conservative—than the 1989 provisional value used by Cal/EPA (0.007 $[mg/kg\text{-}d]^{-1}$). The toxicity values presented in the table below were taken from the EPA Region 9 Preliminary Remediation Goals (PRGs) table.

Carcinogenic Inhalation Toxicity Data		Non-cancer Inhalation Toxicity Data	
SFi $mg/kg\text{-}day^{-1}$	URF $(\mu g/m^3)^{-1}$	RfDi mg/kg-day	RfC mg/m^3
EPA NCEA		EPA NCEA	
0.4	1.1E-04	0.01	0.04
Cal/EPA			
0.007	2E-06		

In calculating risks and hazard quotients (HQs), EPA's spreadsheet model makes direct comparisons of carcinogenic inhalation URFs and non-cancer inhalation RfCs, respectively, to modeled indoor air concentrations.

Modeling results show acceptable noncancer HQs of less than 1 and cancer risks less than 1×10^{-5} (Ohio EPA's cancer risk point of departure). The higher cancer risk of 4.4×10^{-7} was generated using U.S. EPA's more conservative TCE slope factor of 0.4 $(mg/kg\text{-}d)^{-1}$ and the cancer risk generated using the Cal/EPA slope factor of 0.007 $(mg/kg\text{-}d)^{-1}$ was 7.9×10^{-9}. Based on a target cancer risk of 1×10^{-5}, the RBSL calculated using the TCE slope factor of 0.4 $(mg/kg\text{-}d)^{-1}$ is 48 ppmv. Using the Cal/EPA slope factor of 0.007 $(mg/kg\text{-}d)^{-1}$ generated an RBSL of 2,640 ppmv. All of the risk results are summarized on Table 1 along with calculated RBSLs.

The results presented above indicate that soil gas concentrations associated with the north area SVE are below calculated RBSLs and the calculated risks and HQs are acceptable.

Very truly yours,

WESTON SOLUTIONS, INC.

Thomas Cornuet

Thomas Cornuet, P.G.
Project Manager

cc: M. Basso, Wyeth
C. Selinsky, American Roll & Hold
J. Rowlett, WKI
J. Savage, WESTON
M. Corbin, WESTON
A. Kallus, WESTON

Table 1

Comparison of Trichloroethylene (TCE) Soil Gas Concentrations With Calculated Soil Vapor to Indoor Air Risk-Based Concentrations

Toxicity Criteria[1] Cancer Unit Risk Factor ($\mu g/m^3)^{-1}$		Cancer Risk (unitless)	Noncancer HQ (unitless)	Risk-Based Soil Vapor Screening Levels (RBSLs): Target Cancer Risk = 1E-05; Target HQ = 1			Soil Vapor[2] Concentration (ppmv)	Ratio: Soil Vapor Concentration/Min. RBSL		Cancer RBSL Exceeded ?	Noncancer RBSL Exceeded ?
				Risk-Based Soil Vapor Concentration Carcinogen (ppmv)	Risk-Based Soil Vapor Concentration Noncarcinogen (ppmv)	Minimum Risk-Based Soil Vapor Concentration (ppmv)		Cancer	HQ		
Industrial Scenario (Using Site-Specific Building Parameters)											
Cal/EPA	2.00E-06	7.9E-09	2.8E-04	2.64E+03	7.56E+03	2.64E+03	2.1	7.9E-04	2.8E-04	No	No
EPA Provisional	1.10E-04	4.4E-07	2.8E-04	4.81E+01	7.56E+03	4.81E+01	2.1	4.4E-02	2.8E-04	No	No

[1] Cal/EPA recommends the use of the old provisional TCE slope factor of 0.007 $(mg/kg\text{-}day)^{-1}$. This equates to a unit risk factor of 2E-06 $(\mu g/m^3)^{-1}$. The current EPA provisional slope factor for TCE 0.4 $(mg/kg\text{-}day)^{-1}$. This equates to a unit risk factor of 1.1E-04 $(\mu g/m^3)^{-1}$. The new EPA draft value is 57 times more potent than the old provisional of 0.007 $(mg/kg\text{-}day)^{-1}$.

[2] The soil vapor concentration term of 2.1 ppmv represents the maximum soil vapor concentration collected from the North Area SVE system in 2006.

HQ = Hazard Quotient
ppmv = parts per million per volume
RBSL = Risk-Based Screening Level
SVE = Soil Vapor Extraction

Former World Kitchen SVE Soil Confirmation Samples

Primary Treatment Area 1 (West)

CB-09-05	TCE @ 22 and 11 ppm	Boring Refusal @ 9'
CB-10-05	TCE @ <0.005 ppm	n/a
CB-11-05	TCE @ 28 and 79 ppm	Boring Refusal @ 8'

Primary Treatment Area 2 (West)

CB-06-05	TCE @ 52 and 200 ppm	Boring Refusal @ 7'
CB-07-05	TCE @ 470 and 40 ppm	Boring Refusal @ 7'
CB-08-05	TCE @ 23 and 130 ppm	Boring Refusal @ 6'

Other (West)

CB-04-05	TCE @ 0.006 and 2.2 ppm	n/a
CB-05-05	TCE @ 1.7 and 0.010 ppm	n/a

1) Five of the eight soil confirmation boring locations showed TCE concentrations greater than the industrial human exposure risk criteria of 6.1 ppm established in the Consent Order.

2) The calculated volume of soil exceeding risk criteria in Primary Treatment Area 1 based on data above and Figure 2 of the May 4, 2006 evaluation is:

20' wide x 60' long x 8.5' (average refusal) = 10,200 cu.ft. = 375 cu. yds

3) The calculated volume of soil exceeding risk criteria in Primary Treatment Area 2 based on data above and Figure 2 of the May 4, 2006 evaluation is:

20' wide x 80' long x 7' (average refusal) = 11,200 cu.ft. = 415 cu. yds

4) Therefore, the total volume of soil to be remediated in the West Area to meet industrial risk exposure criteria is calculated to be:

375 + 415 = 790 cu.yds.

5) Alternative 2 in the May 4, 2006 evaluation identifies the two areas to be remediated as having 978 + 1667 = 2645 cu. yds., over 3x the volume calculated above.

6) Alternative 3 in the May 4, 2006 evaluation (using the same assumptions as Alternative 2) requires 53 electrodes installed to a depth of 11' in a 7400 sq. ft. area. Based on the calculations above, electrodes could only be installed 6' to 9' in depth (because of boring refusal) in a 2800 sq. ft. area. Only 20 electrodes would need to be installed.

7) Based on the calculations above, costs are expected to be substantially different than those calculated in the May 4, 2006 evaluation. For example, ERH technology is typically estimated to cost $90 to $110 per cu. yd. For a soil volume of 790 cu. yds., the estimated cost is $87,000 rather than the $720,000 to $840,000 calculated in the May 4, 2006 evaluation. Likewise, smaller calculated volumes would also substantially reduce costs for excavation and disposal.

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January 30, 2006

Mr. Kenneth Bardo
Project Manager
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

Re: Remediation System Status and Recommendations
Former World Kitchen, Inc. Massillon, Ohio Facility
U.S. EPA ID No. OHD 045-205-424

Dear Mr. Bardo:

On behalf of Wyeth and World Kitchen, Inc. (WKI), Weston Solutions, Inc. (WESTON®) is providing to the United States Environmental Protection Agency (U.S. EPA) a summary of the remediation system status and recommendations for further action at the former World Kitchen, Inc. Massillon, Ohio facility. We reviewed much of this information with you during our telephone conversation on December 22nd and have incorporated the results of our discussions and other recent site activities. The soil vapor extraction (SVE) and air sparging systems at the former WKI facility have been in operation for approximately 2½ years. The volatile organic compound (VOC) concentrations in the extracted air from the North, East, and West Areas have significantly diminished from initial startup concentrations and are at asymptotic levels. The following is a discussion of key issues in the path going forward for the site.

General Operations

- Since the extracted soil vapor from each of the SVE systems contains VOCs at less than *de minimis* levels, i.e., levels that require emission control, Wyeth has received approval from the Canton City Health Department, Division of Air Pollution Control, to remove the vapor phase granular activated carbon (GAC) emission control units on the SVE systems. All seven GAC units were removed from the facility on Tuesday January 17, 2006. Additional information regarding the GAC removal will be provided in the February 2006 Progress Report. Now that the GAC has been removed from the facility, Wyeth will no longer be generating hazardous waste and will file the appropriate paperwork to reclassify from a Resource Conservation and Recovery Act (RCRA) large quantity generator (LQG) to a non-generator.

- The new property owner, American Roll and Hold, is fully utilizing the facility and there is heating throughout the building. As a result, it is unlikely that the pipes from pumping

wells W1 and W10 will freeze this winter as they did last year when the building was unoccupied.

North Area – The extracted soil vapor concentrations from the North Area generally fluctuate in the range from 3 to 20 ppmv with a flow rate of 400 to 600 cfm. As such, the North system removal ranges from approximately 1 to 6 lbs of VOCs/day. The North SVE system operation will continue and an evaluation of system performance and recommendations for further action will be provided in the February 2006 Progress Report.

West Area – There is no significant removal occurring in the West Area and the system is not operating due to wet conditions. During the 2½ years of operation, it was observed that much of the West Area was inundated with water and had very poor drainage. This was due to a number of factors such as topography, malfunctioning roof drains, and soil type. Although there are some minor granular lenses, soils in this area primarily consist of dense clays, highly weathered shale, and silt, which are not conducive to airflow. Confirmatory boring analytical results from August 2005 indicate that there are some locations where elevated TCE remain. Due to site conditions, further operation of the West Area SVE system will be of no benefit and is impractical.

Accordingly, Wyeth requests permission to shut down the West SVE system and recommends the implementation of engineering controls as the corrective measure for the West Area per Section 4.1(b) of Attachment 2 of the RCRA administrative order on consent (Consent Order). Specifically, Wyeth proposes to decommission the SVE system, plug and abandon the SVE vents and install a surface barrier over the areas of higher residual concentrations to prevent the potential for direct contact and minimize infiltration. As such, these locations in the West Area will be paved with asphalt in the spring of 2006 and sloped to drain to the extent feasible. American Roll and Hold has approved implementation of an asphalt paving surface barrier to facilitate the SVE remediation system closure. The preliminary paving plan for the West Area is shown in Figure 1. A final paving plan will be reviewed with the current owner prior to installation. The site institutional controls will be maintained so that the surface barrier is not disturbed and the site monitoring plan is continued.

East Area –The VOC concentrations in the extracted air from the East SVE system have decreased to a negligible removal rate (approximately 2 pounds per month). Confirmatory boring analytical results from August 2005 indicated that there are some locations where TCE remains at concentrations greater than the remedial target. Only one of the samples (CB-02) collected at 4-4.5 ft bgs exceeded the industrial human exposure goal for TCE. In an effort to further treat these TCE concentrations, beginning in October 2005 WESTON operated only the vents closest to these soils (vents V301, V305, V306, and V307). The other vents were closed so all the vacuum and flow were directed to these four open vents. As a result, the organic vapor meter (OVM) readings increased from 0 ppmv prior to closing the vents up to 0.9 ppmv after closing the vents. Although an increase, this operating arrangement does not result in any significant mass removal (less than 0.2 lbs/day).

Based on this operating information, there is little benefit to continued operation of the East Area SVE system and alternative engineering controls should be implemented to address residual levels in the soils in this area. Accordingly, Wyeth requests permission to shut down the East Area SVE system and recommends implementation of a surface paving barrier, as described above for the West Area, for the soils in the area of boring CB-02 which exceeded the industrial exposure goal for TCE. A preliminary paving plan for the East Area is shown in Figure 2. A final paving plan will be reviewed with the current owner prior to installation.

The East Area SVE system vacuum blower is currently malfunctioning and 3-D Service, Inc., the local maintenance service provider, has been contacted to evaluate the required repairs. The East Area air sparge system is operating properly. In recent quarters, the TCE concentrations in groundwater at monitor well AS-01 in the East Area have increased to 90 ug/L. Wyeth proposes to operate the air sparge system with two points open and two points closed, and to periodically alternate this operation at the four sparge wells, to evaluate whether removal of VOCs from groundwater can be improved by increasing air flow to individual sparge points.

Implementation of engineering controls as the alternative corrective measure for the East Area and West Area SVE systems would be implemented in the spring of 2006. WESTON is currently working with a preferred paving company recommended by American Roll and Hold, in preparing a preliminary installation schedule to coincide with the May 2006 quarterly sampling event, pending EPA approval

In summary, we would like to discuss with you the recommendations for the East and West Areas at the former WKI facility to finalize the path going forward. We will follow-up with a phone call. If you have any questions, please contact me at (610) 701-7360 or Mr. Matthew Basso at (973) 660-6726.

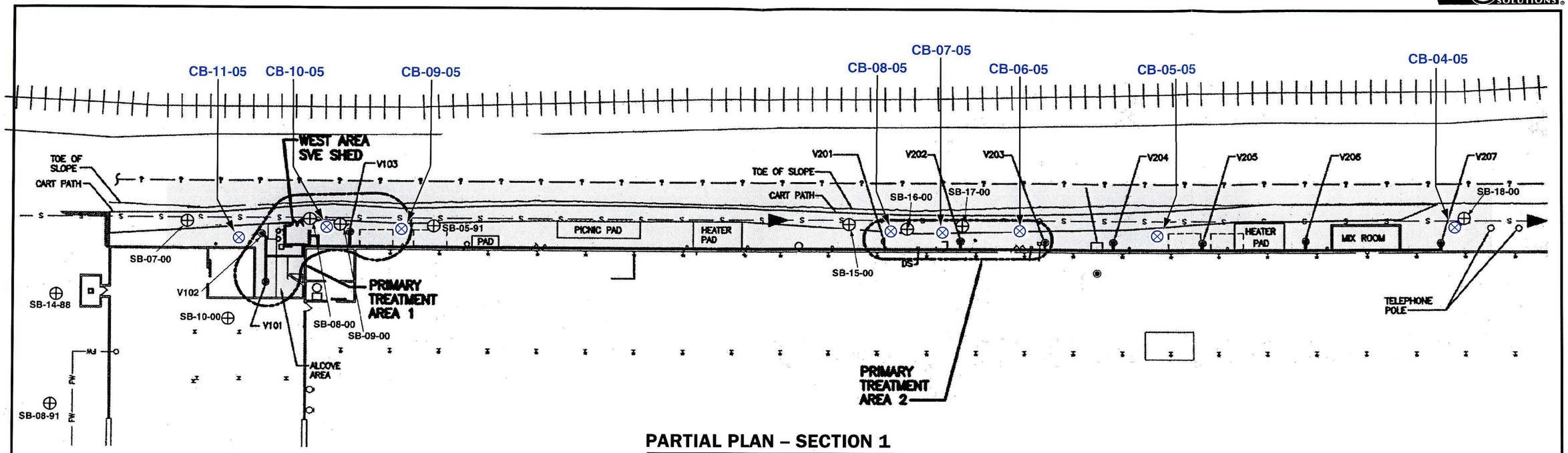
Very truly yours,

WESTON SOLUTIONS, INC.

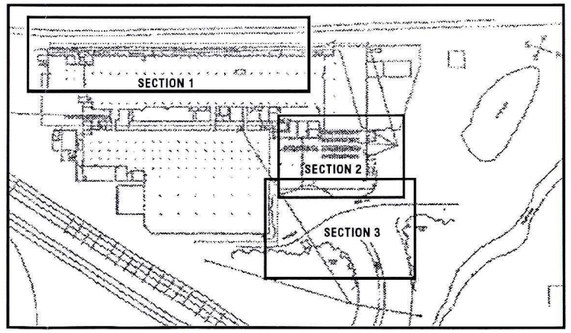
Thomas S. Cornuet, P.G.
Project Manager

Attachment

cc: M. Basso, Wyeth
J. Rowlett, WKI
L. Bove, WESTON
M. Corbin, WESTON
J. Savage, WESTON
C. Selinsky, American Roll and Hold



PARTIAL PLAN – SECTION 1



KEY PLAN
N.T.S.

LEGEND

- —FW— EXISTING FIRE WATER PIPING
- EXISTING RAIL LINE
- —S— EXISTING STORM SEWER PIPING
- —?— POSSIBLE PIPING
- SVE PIPING
- DS° EXISTING DOWN SPOUT
- R–2 ■ EXISTING GROUNDWATER MONITOR WELL
- W–10 □ EXISTING RECOVERY WELL
- ⊕ FORMER SOIL BORING LOCATION
- ◉ SOIL VAPOR EXTRACTION VENT
- ⊗ APPROXIMATE LOCATION OF CONFIRMATION SOIL BORING
- PROPOSED PAVING AREA

AS–BUILT DRAWING

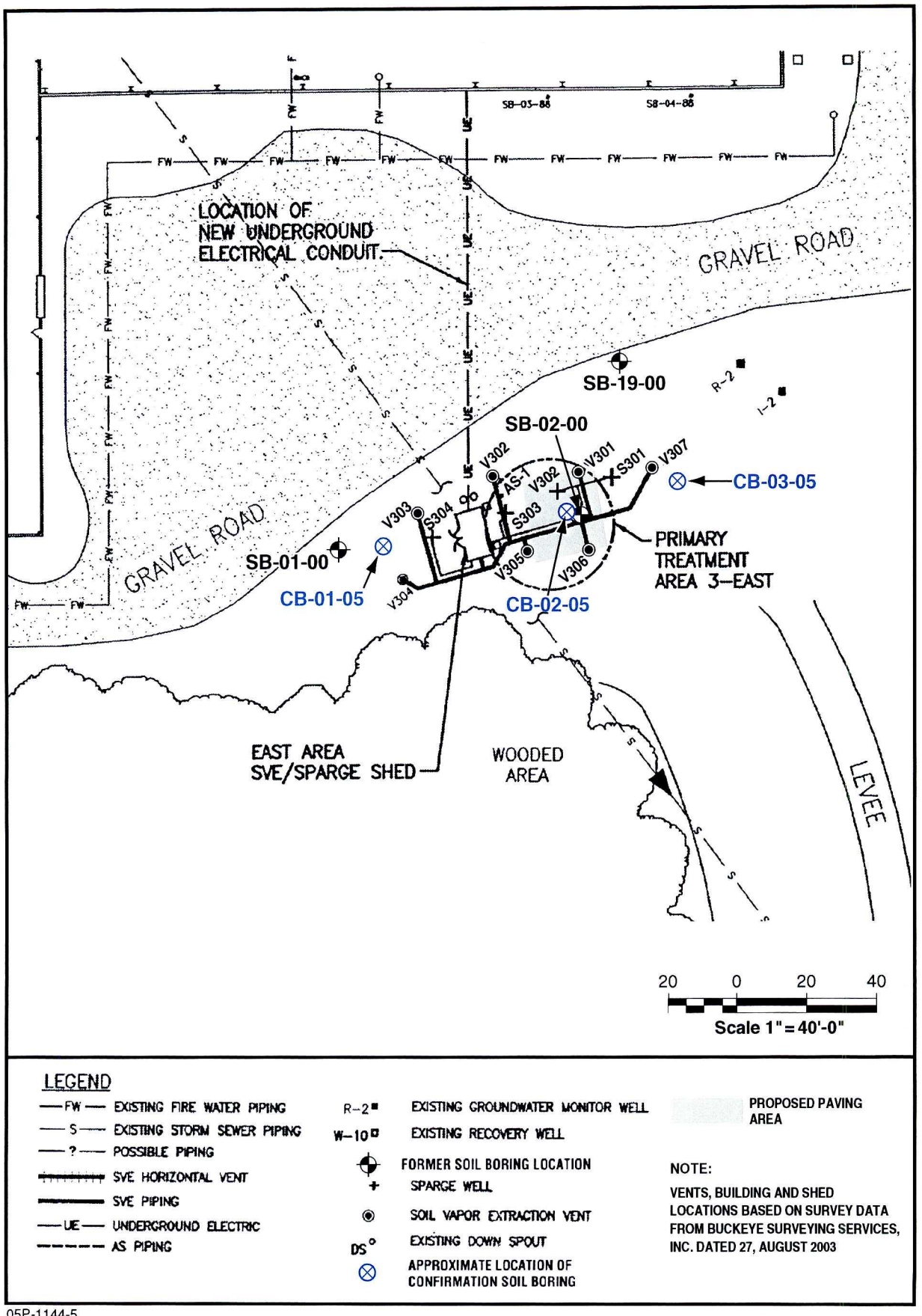
20 0 20 40
Scale 1"=40'-0"

NOTE:

VENTS, BUILDING AND SHED LOCATIONS BASED ON SURVEY DATA FROM BUCKEYE SURVEYING SERVICES, INC. DATED 27, AUGUST 2003

05P-1144-6

FIGURE 1 LOCATION OF CONFIRMATION SOIL BORINGS AND PROPOSED PAVING AREA – WEST AREA



05P-1144-5

FIGURE 2 LOCATION OF CONFIRMATION SOIL BORINGS AND PROPOSED PAVING AREA – EAST AREA

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December 20, 2004

Mr. Pat Patrella
Canton City Health Department
Air Pollution Control
420 Market Avenue, North
Canton, Ohio 44702-1544

Dear Mr. Patrella,

On behalf of Wyeth, Weston Solutions, Inc. (WESTON®) is providing this project status update on the soil vapor extraction (SVE)/air sparge (AS) remediation system at the World Kitchen, Inc. (WKI) facility in Massillon, Ohio, which has been in operation since August 2003. We are also requesting a 12-month extension to the 18-month permit-by-rule exemption due to expire in February 2005.

Mike Corbin and I met with you and Mr. Patrick Shriver on June 29, 2004 to review this project. Since our meeting in June, the WKI plant closed and ceased all manufacturing operation effective September 24, 2004. The plant closure will not impact WESTON's implementation of the remediation systems at the WKI facility.

As we agreed, a project status update and plans for further activities at the facility would be submitted to the Canton City Health Department Air Pollution Control (APC) at least 30 days prior to reaching the 18 months of operation under the permit-to-install (PTI) exemption period, which ends on February 11, 2005. Accordingly, the following is a brief summary of system operation and performance to date, as well as plans for activities in 2005.

Introduction

Wyeth is currently conducting soil and groundwater remediation at the WKI facility in Massillon, Ohio (U.S. EPA ID No. OHD 045-205-424) under the Resource Conservation and Recovery Act (RCRA) Corrective Action Program (CAP). This remediation effort complies with the requirements of an Administrative Order on Consent (Consent Order) between the United States Environmental Protection Agency (U.S. EPA) Region 5, WKI (the recent facility owner prior to sale), and Wyeth (a previous facility owner).

In preparation for the remedial effort, WESTON had submitted, on behalf of Wyeth, the *Final Information Submittal for the Soil Vapor Extraction/Air Sparge Remediation System at the World Kitchen, Inc. Massillon, Ohio Facility* (May 2003) to the Canton City Health Department, Air Pollution Control (APC). The purpose of the submittal was to obtain an exemption from the requirement to obtain a Permit to Install (PTI) New Sources for the SVE system. It was

submitted to APC as required under Ohio Administrative Code (OAC) 3745-31-03(A)(4)(d), which is a permit-by-rule exemption for soil vapor extraction (SVE) systems. The APC approved the submittal in May 2003 and on August 11, 2003, the operation of the SVE/AS remediation system commenced under the permit-by-rule for SVE systems. The permit-by-rule allows for an operating period of 18 months. In a meeting with WESTON on June 29, 2004, the APC indicated that the SVE systems can operate beyond this time period as long as emissions are below *de minimis* values and a project summary and plans for further action are provided to the APC at least 30 days before the end of the period. The end of the period is February 11, 2005. As such, the following project information and plans are provided so that, if necessary, the SVE/AS systems may continue to operate beyond February 2005.

System Description

Volatile organic compounds (VOCs) primarily trichloroethylene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), and their breakdown products, have been detected in soil and groundwater at the facility. Their presence in soil and groundwater originated from past chlorinated solvent use during manufacturing activities. Specifically, TCE and 1,1,1-TCA were used for cleaning and degreasing. Their use was discontinued in 1994, when they were replaced with a Borax aqueous cleaner.

Areas where VOCs have been detected in the soil and groundwater beneath the facility are shown in Figure 1 and include: inside the plant building near well W-10 (North Area – Area 4), outside the building along the western wall (West Area – Areas 1 and 2), and east of the northeastern corner of the plant building (East Area – Area 3).

SVE is being implemented in each of these areas to remove VOCs from vadose (unsaturated) zone soils and sparging is also being implemented to remove VOCs in the groundwater at the East Area. SVE removes VOCs from soil by drawing air through soil pore spaces. As the air moves through the soil, VOCs volatilize into the subsurface air. A suction blower is used to create a negative pressure (vacuum) in a series of extraction vents that have been installed in an impacted area. This negative pressure causes air to be drawn from the subsurface unsaturated zone soil. In the East Area, the air sparging and SVE systems overlap so that the air sparged into the groundwater by a blower can be collected by the SVE system.

Attachment 1 contains a copy of the general piping layout for the SVE vents and sparge system at the WKI facility. The East Area contains 7 SVE vents and 4 air sparge wells. The West Area contains 10 SVE vents and the North Area contains 13 SVE vents. Each of the SVE systems has a suction blower and associated equipment, which are enclosed in a shed. The east system also has a sparge blower. Pictures of the SVE and sparge systems are provided in Attachment 2.

At the WKI site, the collected subsurface air stream is treated by vapor phase granular activated carbon (GAC) units in series prior to discharge to the atmosphere. Both the East and West Areas

have two 400-lb units in series. The North Area initially operated with two 2000-lb units in series. In May 2004, a third 2000-lb unit was added in series so that the system could operate longer between carbon changeouts. Approximately 48,200 lbs of GAC have been used to control emissions since startup operations in August 2003.

System Operation and Emission Control

During operation, the SVE systems are monitored frequently to ensure that emissions remain below *de minimis* levels. This consists of collecting real-time organic vapor meter (OVM) readings at the discharge from the carbon units, in between carbon units, and upstream of the carbon units. The OVM reading collected at the discharge of the carbon units is used in the following calculation to estimate VOC emissions per day and to show that *de minimis* levels are not exceeded:

(**A**/1,000,000) x (133 lb organic/mole organic) x (mole air/28.9 lbs air) x
(0.075 lb air/ft^3) x **B** x 60min/hr x **C** = VOC emissions in lbs/day

where:
A = OVM reading in ppmv
B = Flow rate in ft^3/min (cfm)
C = Number of hours of run time in one day (hr/day)

Note that 133 lb is the molecular weight of TCA, the heaviest compound detected, and is conservatively used here as the total composition of the emission.

In accordance with OAC 3745-15-05, *de minimis* emissions for the SVE systems are VOC emissions no more than 10 lbs/day per system (i.e., north, east, west) and the air permit exemption requires that the combined emissions of the three systems cannot exceed 15 lbs/day. Additionally, over a period of a year, TCE and vinyl chloride (VC) (the only two hazardous air pollutants (HAPs)), cannot exceed 1 ton of emissions.

The OVM reading collected in between the carbon units is used to determining when breakthrough of a unit occurs and subsequent changeout of spent carbon unit can be scheduled. The OVM reading collected upstream of the carbon units is used in tracking the concentrations of VOCs extracted in the soil vapor and identifying concentration trends.

Initially, the OVM readings were collected frequently (3 to 5 times per week). Once the carbon usage rate was established and the VOC concentrations in the extracted air decreased, the frequency of monitoring also decreased (1 to 2 times per week).

In addition to real-time OVM readings, summa canister air samples are collected periodically upstream of the carbon units and analyzed by Method TO14 to identify the VOCs in the extracted soil vapor and to estimate mass removal from soil and groundwater.

System Performance

Since August 2003, the West and East SVE and sparge systems have operated essentially continuously, except for maintenance downtimes or downtime due to knockout pot (moisture separator) high-level shutdown. OVM readings on the discharge from these systems indicate that the *de minimis* levels have not been exceeded. Additionally, the extracted soil vapor from these areas is well below the individual *de minimis* level of 10 lbs VOCs/day per SVE system. Currently, the East system extracts approximately 0.3 lb of VOCs/day and the West system extracts approximately 0.1 lb of VOCs/day for a combined total of less than 0.5 lb/day for both systems. Figures 2 and 3 show the decreasing VOC concentrations in the extracted soil vapor from the commencement of system operations at the East and West Areas, respectively. Even though the soil vapor is below *de minimis* levels before the GAC in the East and West systems, Wyeth has elected to leave the GAC units online until their continued use becomes impracticable.

Due to the initial high loading of VOCs in the extracted soil vapor and the need to maintain compliance with air permit exemption requirements, the North system was initially operated only during weekdays (i.e., Monday through Friday), 6 to 10 hours per day. As the concentration of VOCs in the extracted air decreased, the run time per day was increased. In May 2004, a third 2,000-lb carbon unit was placed in series and this, combined with decreasing VOCs in the extracted soil vapor, allowed for 24-hours/day, 7 days/week operation.

OVM readings on the discharge from the North system indicate that the *de minimis* levels have not been exceeded. Additionally, the extracted soil vapor from this area is approaching the individual *de minimis* level of 10 lbs VOCs/day per SVE system. Currently, the North system extracts approximately 12 lbs of VOCs/day before the GAC. Figure 4 shows the decreasing VOC concentrations in the extracted soil vapor as measured before GAC at the North Area. When extracted vapor concentrations decrease to below *de minimis* levels, Wyeth may elect to remove the GAC from the North system. Wyeth will discuss this in advance with the APC.

In summary, since commencing SVE/AS operations in August 2003, approximately 48,200 lbs of carbon have been used to control emissions from the SVE systems. No exceedance of *de minimis* levels has occurred.

Additionally, the concentrations of VOCs detected in soil vapor extracted by the West and East systems have decreased to below *de minimis* levels. The concentrations of VOCs detected in the soil vapor extracted by the North system are showing a downward trend and are below *de minimis* levels after GAC. As such, Wyeth is requesting a 12-month extension beyond the 18-

month period allowed in the permit-by-rule exemption, should it be necessary to operate the SVE/AS systems past February 2005.

WESTON and Wyeth appreciate the opportunity to work with the APC on this important remediation project. If you should have any questions or comments, please call me at (610)701-7360.

Very truly yours,

WESTON SOUTIONS, INC.

Thomas Cornuet

Thomas Cornuet, P.G.
Project Manager

Attachment

cc: K. Bardo, U.S. EPA
M. Basso, Wyeth
J. Rowlett, WKI
M. Corbin, WESTON
J. Savage, WESTON
B. King, B&S

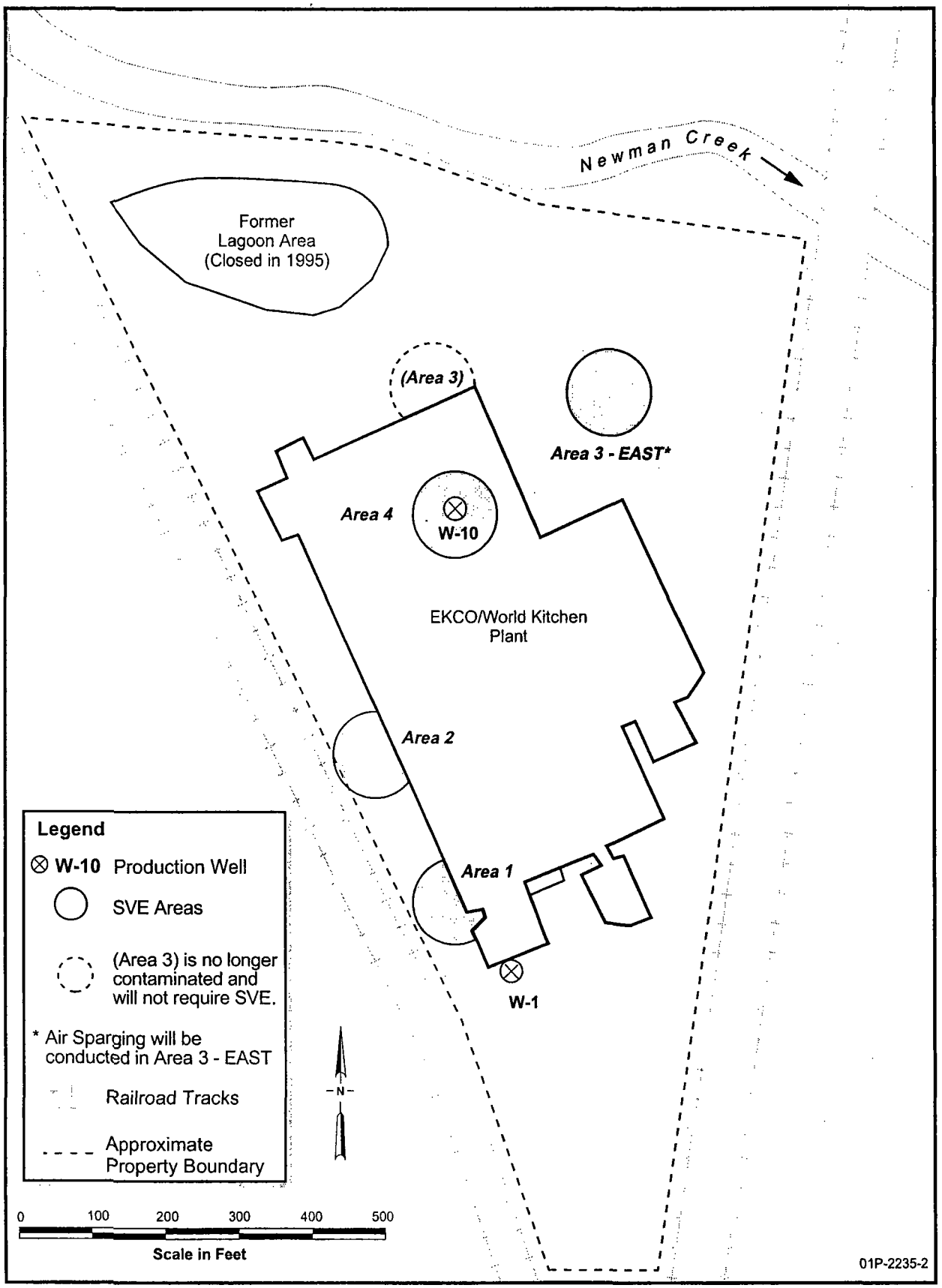

FIGURE 1 SOIL VAPOR EXTRACTION (SVE) AND AIR SPARGING AREAS

Figure 2 Total VOCs in Extracted Soil Vapor (Before GAC) - East System
WKI - Massillon, Ohio

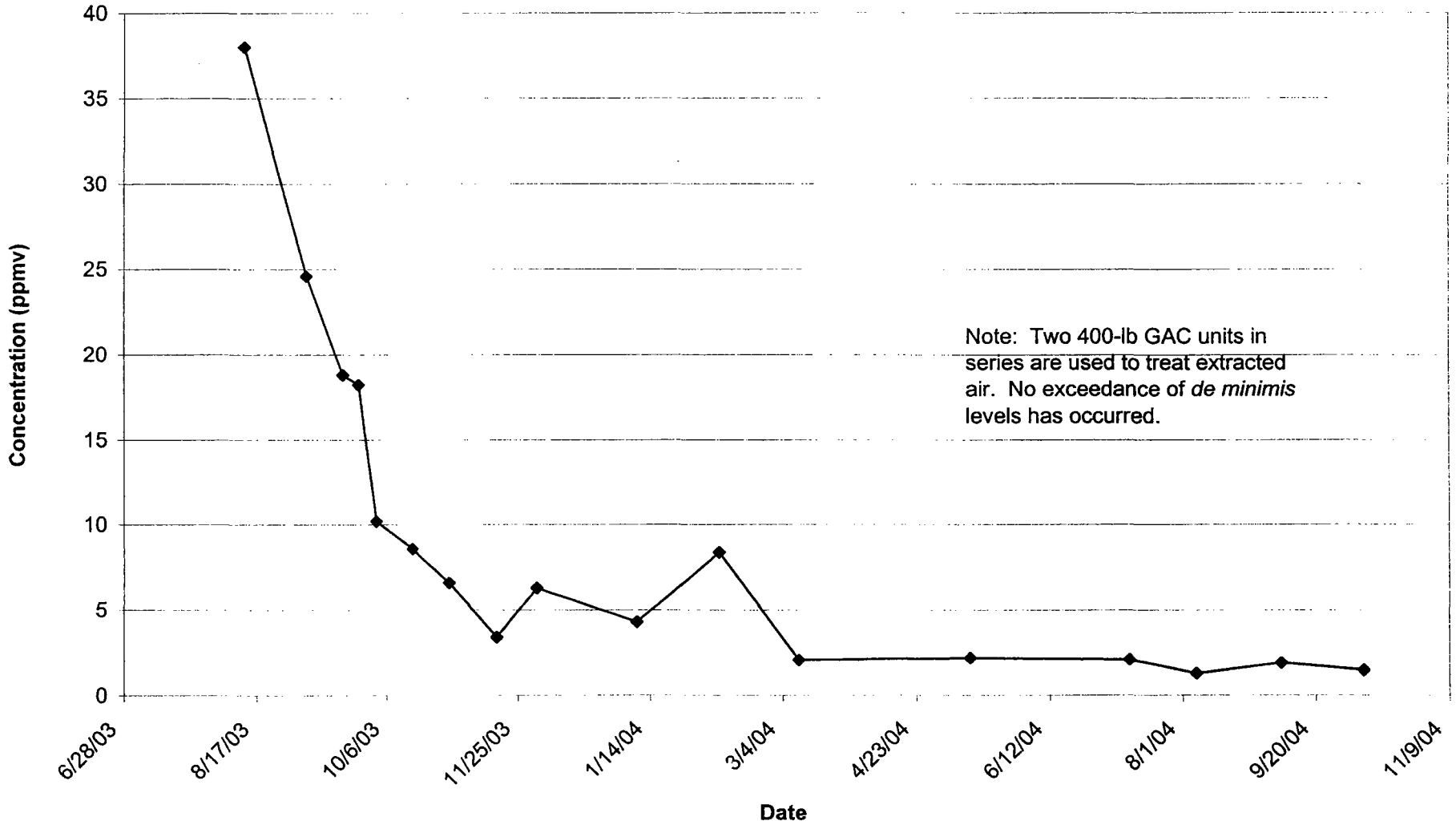

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Figure 3 Total VOCs in Extracted Soil Vapor (Before GAC) - West System
WKI - Massillon, Ohio

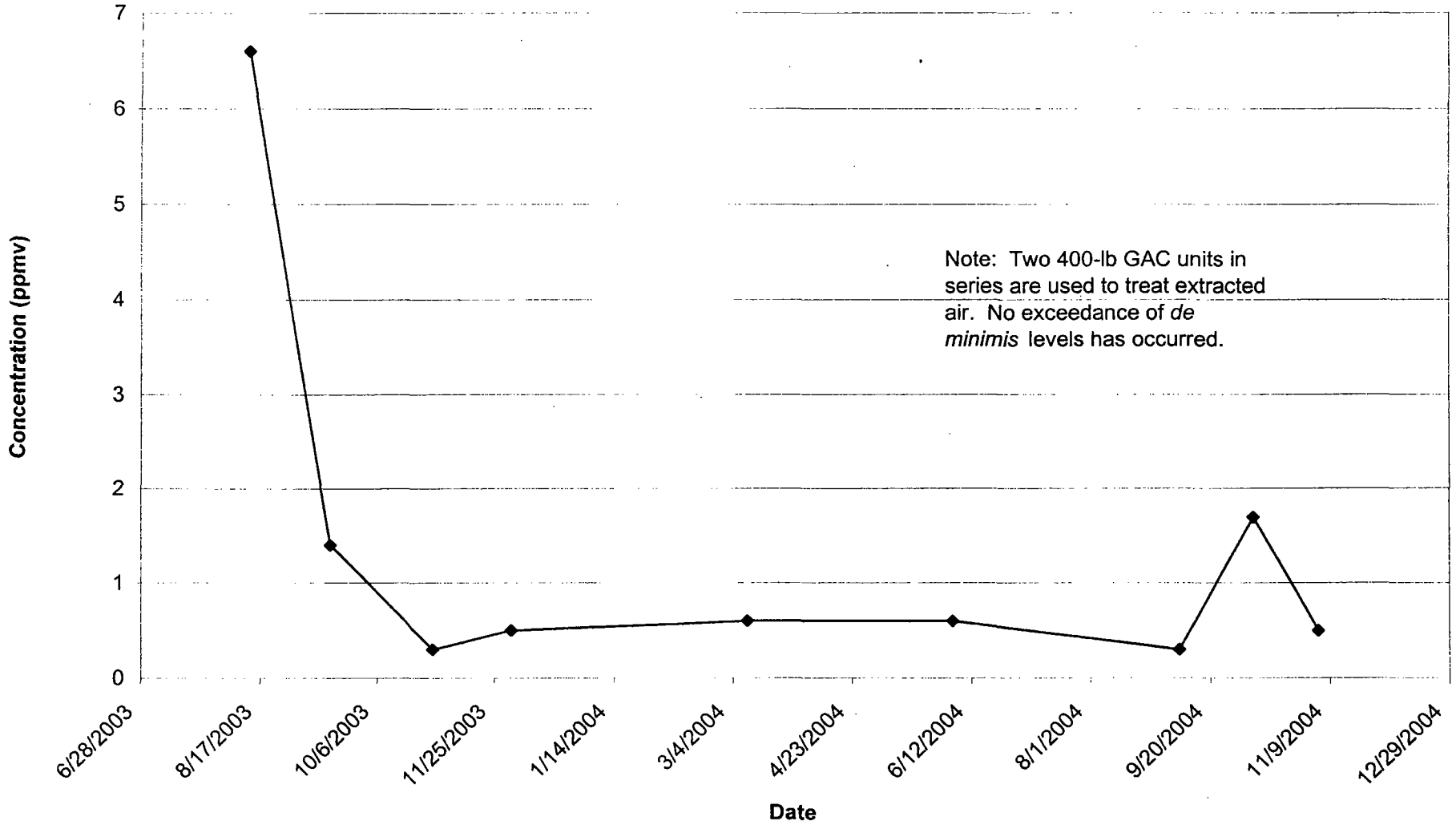

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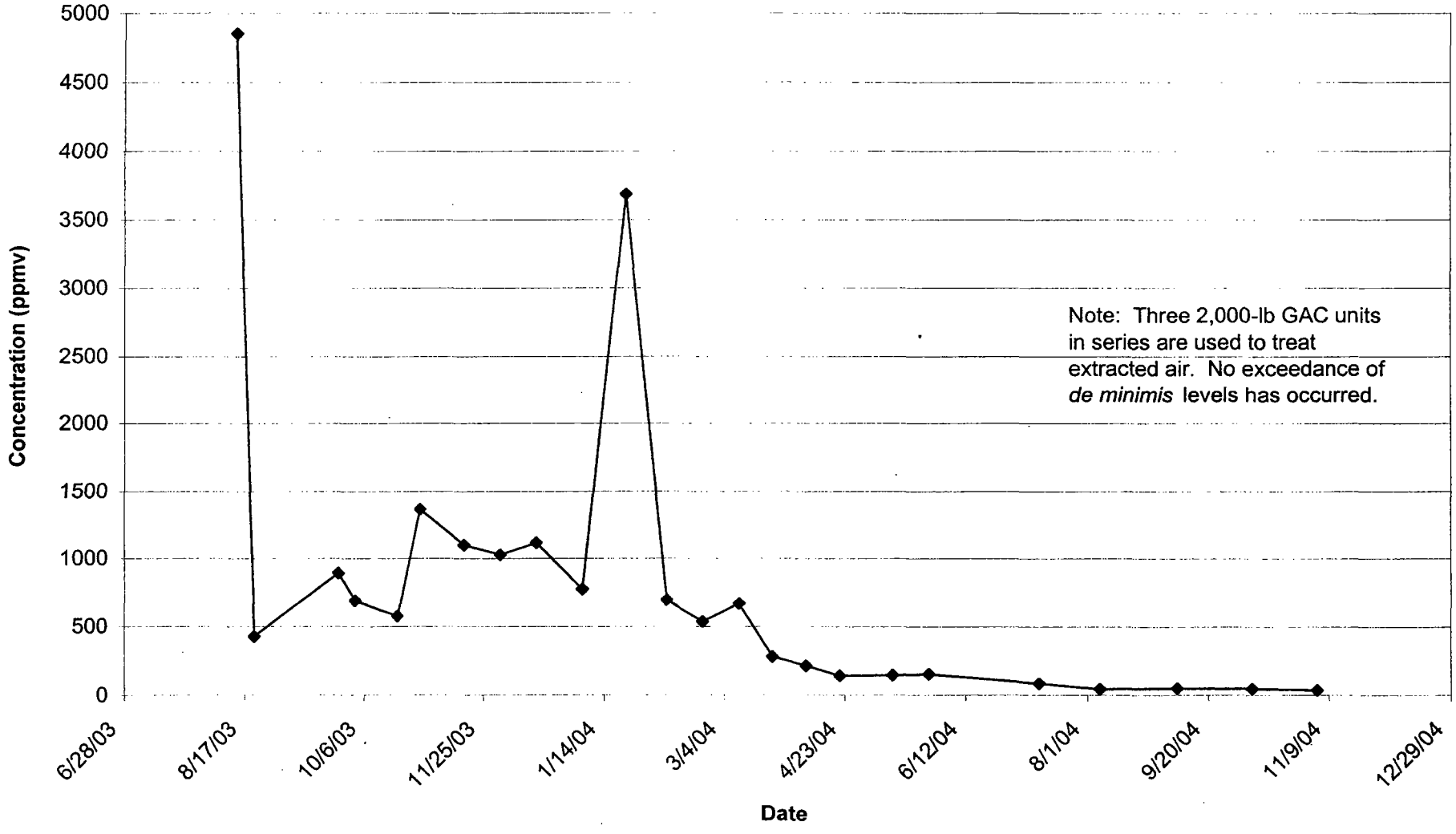
Figure 4 Total VOCs in Extracted Soil Vapor (Before GAC) - North System
WKI - Massillon, Ohio



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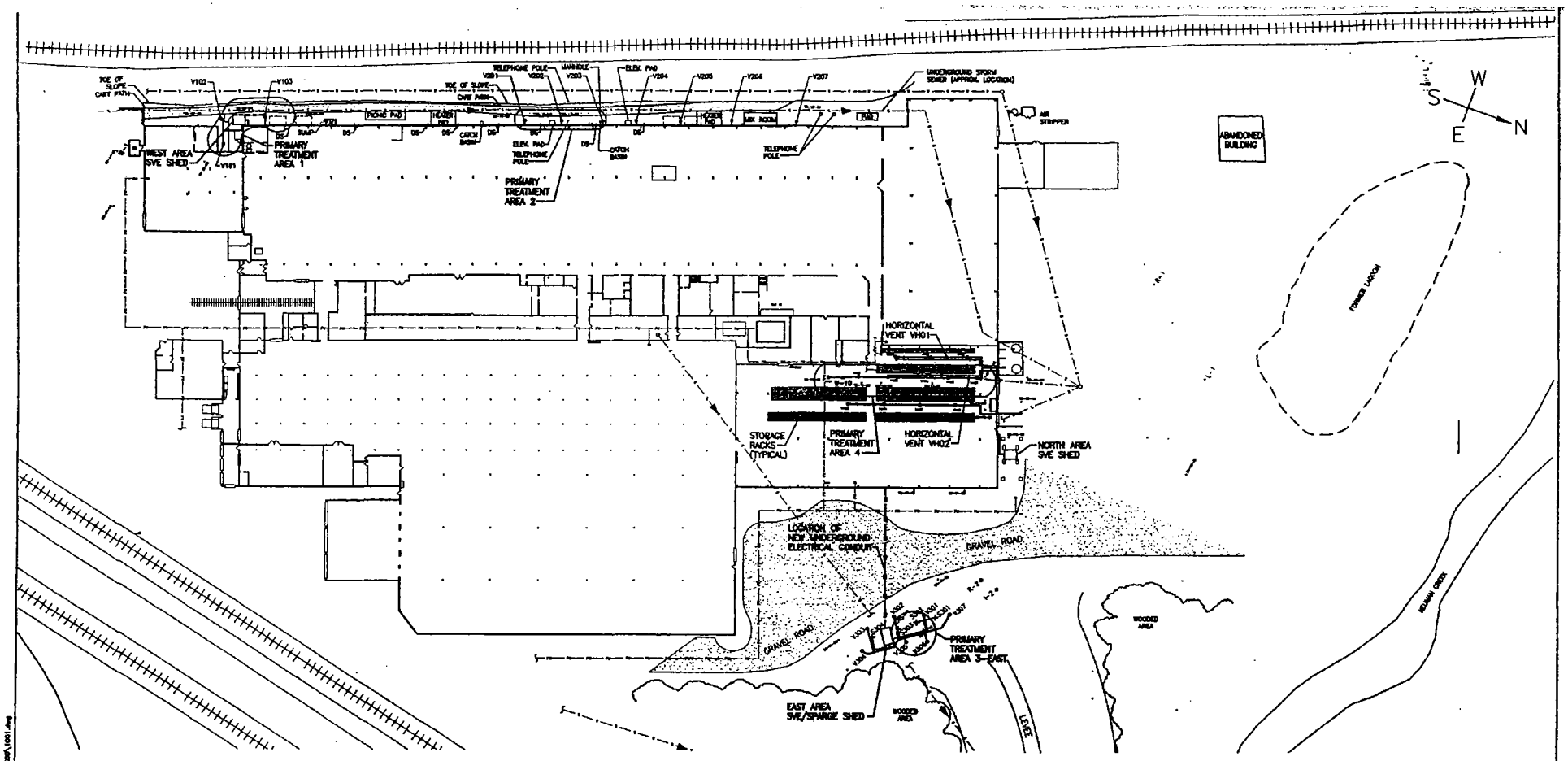
ATTACHMENT 1

SVE and Sparge General Piping Layout



NOTE:

VENTS, BUILDING AND SHED LOCATIONS BASED ON SURVEY DATA FROM BUCKEYE SURVEYING SERVICES, INC. DATED 27, AUGUST 2003.

LEGEND

—FW— EXISTING FIRE WATER PIPING	R-2 EXISTING GROUNDWATER MONITOR WELL
EXISTING RAIL LINE	W-10 EXISTING RECOVERY WELL
—S— EXISTING STORM SEWER PIPING	SOIL BORING LOCATION
—?— POSSIBLE PIPING	SPARGE WELL
SVE PIPING	SOIL VAPOR EXTRACTION VENT
—UE— UNDERGROUND ELECTRIC	DS EXISTING DOWN SPOUT
AS PIPING	

AS-BUILT DRAWING

40 0 40 80

SCALE 1"=40'-0"

C	A.B.H.	11/4/02	REVISED TO REFLECT AS-BUILT CONDITIONS.
B	A.B.H.	10/2003	REVISED PLAN BASED ON SURVEY DATA DATED 27 AUGUST 2003.
A	A.B.H.	10/2003	SHIFTED PRIMARY TREATMENT AREA 2 TEN FEET SOUTH.

WORLD KITCHEN, INC.
MASSILLON, OHIO FACILITY
Prepared for Wyeth, Madison, New Jersey

WESTON

DRAWN		DATE
DES. ENG.	R.H.J.	10/2003
PROJ. ENG.	J.S.	10/2003
PROJ. MGR.	T.C.	10/2003
APPROVED		
APPROVED		

CLIENT APPROVED

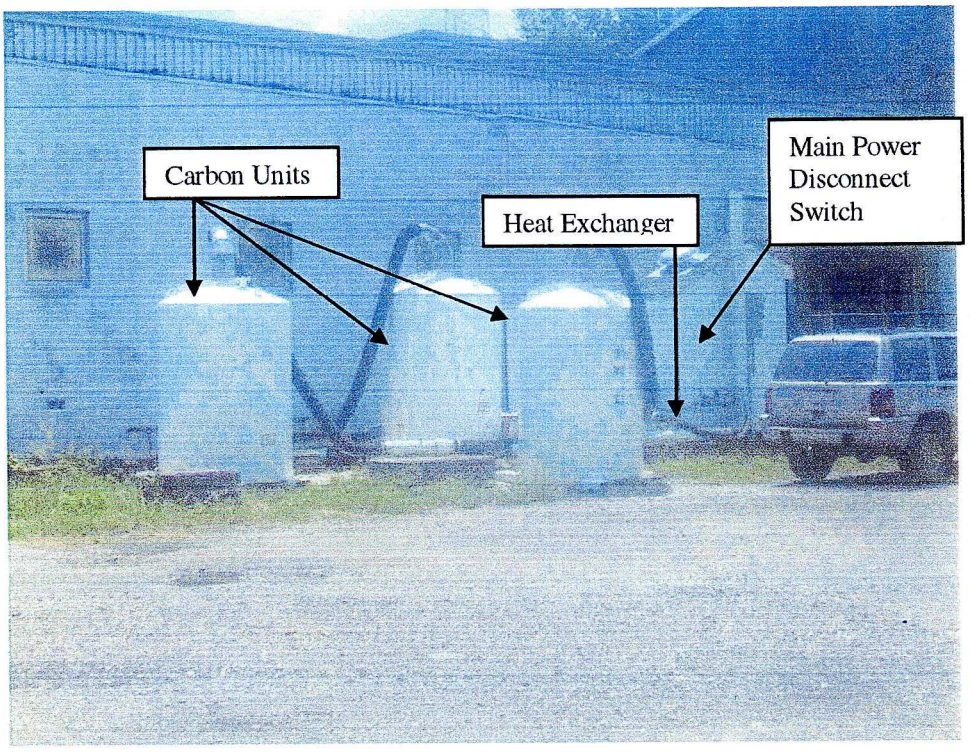
SVE AND SPARGE
GENERAL PIPING LAYOUT

DRAWN	A.B.H.	DATE	11/4/02
SCALE	1"=40'-0"	DWG. NO.	101
W.O. NO.	02994002008000	REV. NO.	C

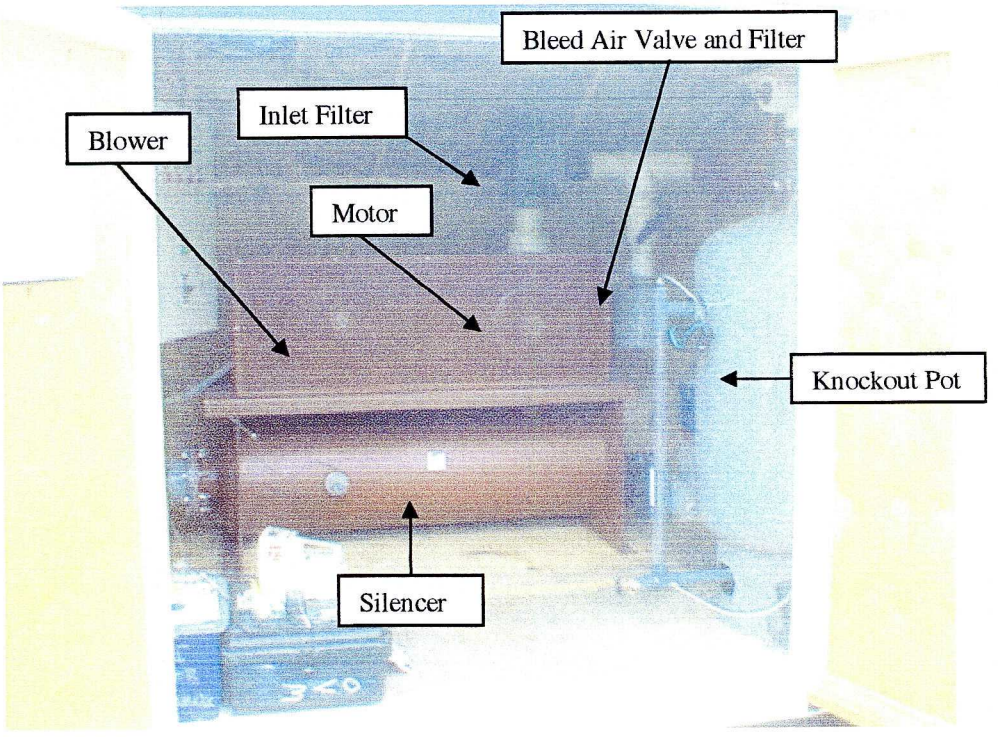
FILE NO. G:\JOB\WOL\02994002008000 EXSV\101.dwg

ATTACHMENT 2

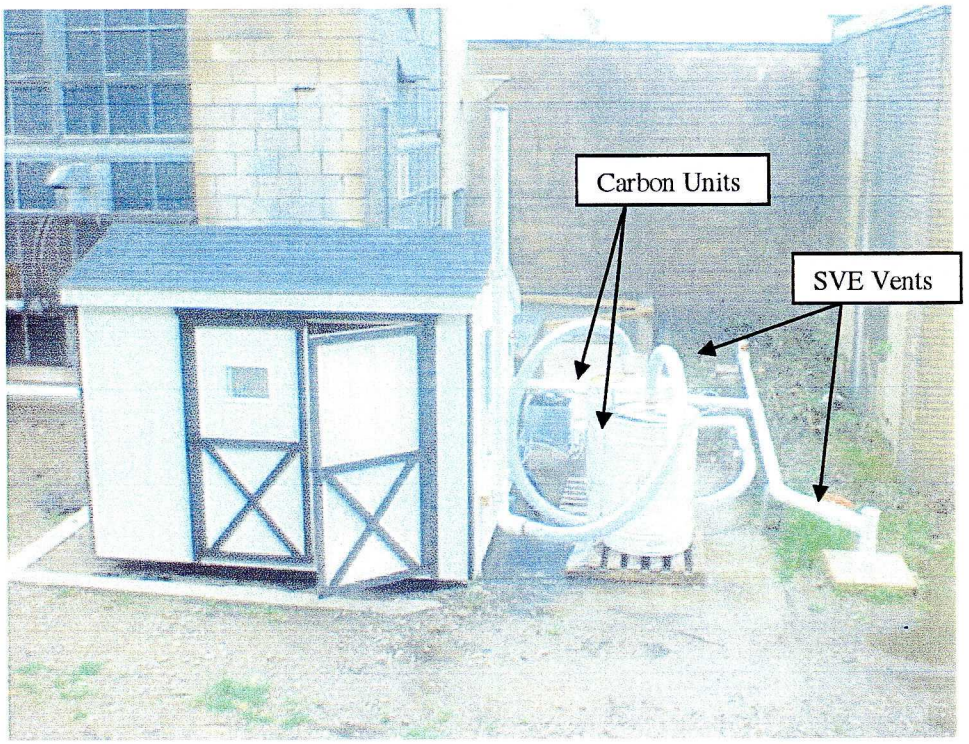
Photographs of the SVE/AS Systems



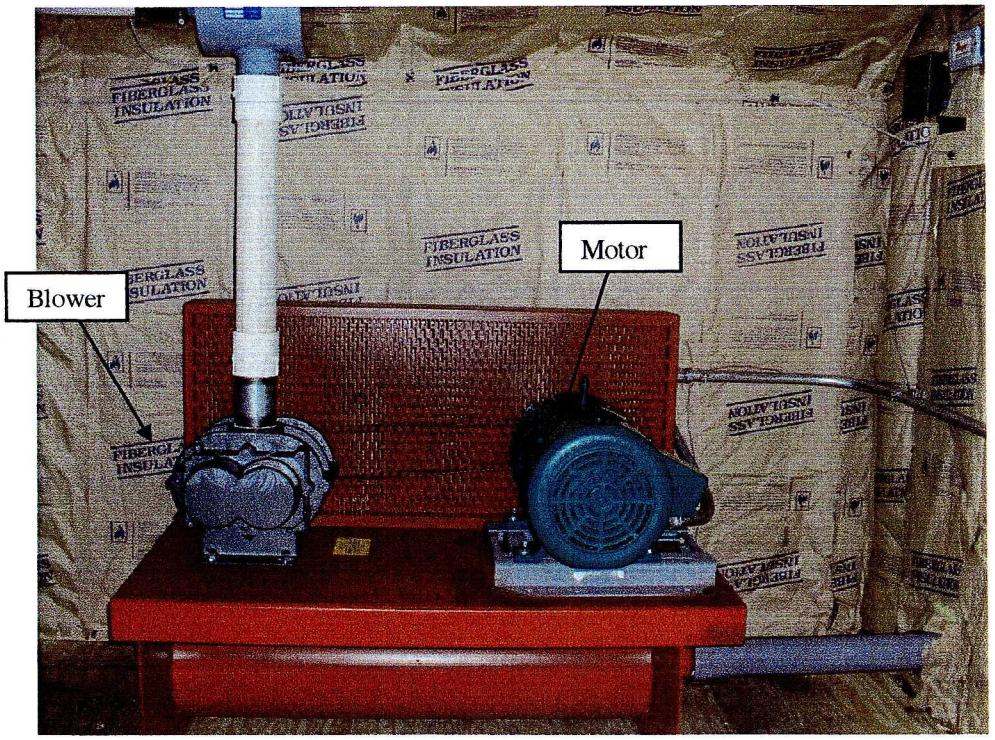
North Area Shed Unit



Inside North Area SVE Shed Unit



West Area Shed Unit



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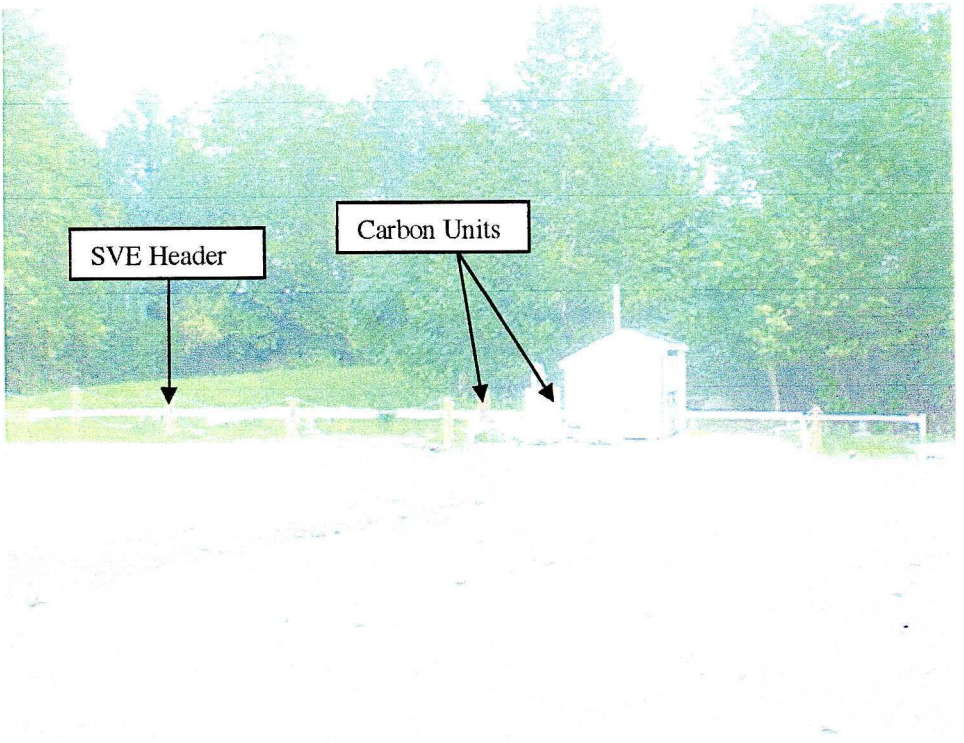
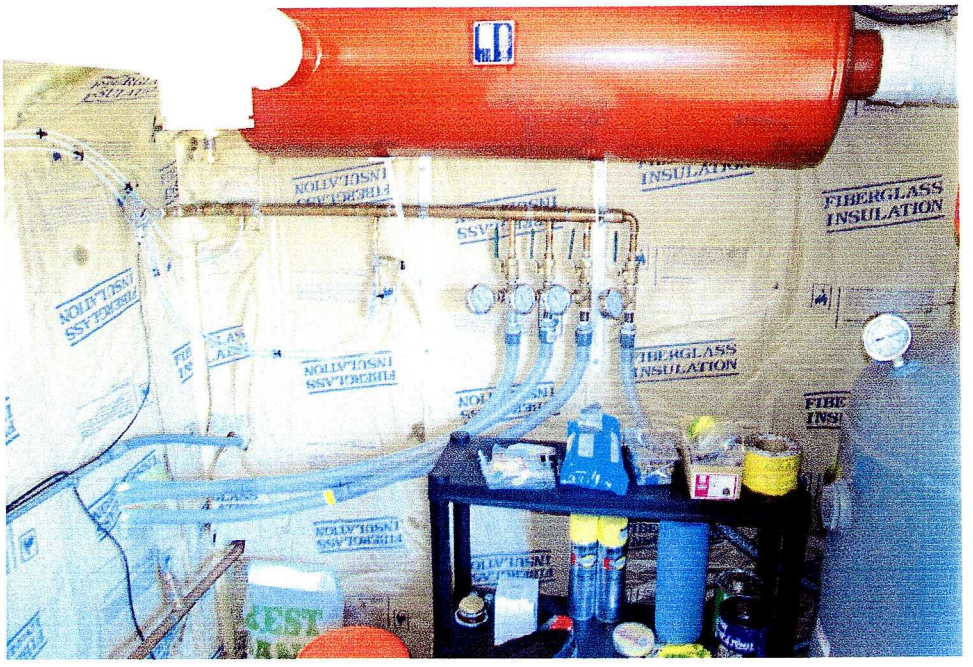


East Area Shed Unit



East Area – Air Sparge Manifold

Weston Solutions, Inc.
1400 Weston Way
P.O. Box 2653
West Chester, Pennsylvania 19380
610-701-3000 • Fax 610-701-3186
www.westonsolutions.com

September 30, 2003

Ms. Valerie J. Orr
Ohio EPA
Class V Coordinator - UIC Section, DDAGW
122 S. Front Street
Columbus, Ohio 43215

Re: First Monthly Operating Report (8/12/03 to 9/15/03)
Air Sparge System
World Kitchen, Inc.(WKI),Massillon, Ohio Facility
U.S. EPA I.D. No. OHD 045-205-424

Dear Ms. Orr:

On behalf of Wyeth, Weston Solutions, Inc. (WESTON®) is submitting the first monthly operating report (Attachment 1 to this letter) for the air sparging system at the World Kitchen, Inc. (WKI) facility located at 359 State Street, Ext. NW in Massillon, Ohio. In May 2003, Wyeth submitted to the Ohio EPA an *Application for Exemption from Formal Permitting of Class V Air Sparge Wells* for the installation and operation of four air sparge wells at the WKI facility. The Ohio EPA authorized the installation and operation of these wells in a letter to WESTON dated May 27, 2003.

On June 16 and 17, 2003, air sparge wells S301, S302, S303, and S304 were installed in accordance with the exemption application. The Underground Injection Control (UIC) Class V Well Inventory Form has been completed for the four sparge wells and is provided in Attachment 2 to this letter. The locations of the air sparge wells are shown on Figure 1 provided in Attachment 2 to this letter. The well construction details and longitude/latitude for each well are also provided on Figure 1 in Attachment 2.

Groundwater monitor well AS01 had previously been installed in the center of the air sparging area on June 2, 2003. Groundwater data collected at this well will be provided in the monthly operating reports.

The soil vapor extraction (SVE)/air sparge system was started up on August 12, 2003 and has operated for approximately one month. Thus, the first monthly operating reporting period extends from August 12 to September 15, 2003. Attachment 1 contains the first monthly operating report for the air sparge system at the WKI facility. Future monthly monitoring reports will extend from the 15th of each month to the 15th of the following month.

If you have any comments or question regarding this submittal, please do not hesitate to call me at (610) 701-7360.

Very truly yours,

WESTON SOLUTIONS, INC.

Thomas Cornuet

Thomas Cornuet, P.G.
Project Manager

cc: K. Bardo, USEPA
M. Basso, Wyeth
J. Burman, WKI
M. Corbin, Weston
J. Savage, Weston

ATTACHMENT 1

Monthly Operating Report

AIR SPARGING
MONTHLY OPERATING REPORT

Site Name and Location:	World Kitchen, Inc. (WKI), Massillon, Ohio
U.S. EPA I.D. No:	OHD 045-205-424
Weston Project Manager:	Thomas Cornuet, P.G.
Wyeth Project Manager:	Matt Basso
UIC Class V Coordinator:	Valerie J. Orr
Reporting Period:	August 12 to September 15, 2003

Description of Injected Fluids

Ambient air is injected into sparge wells by means of a blower located aboveground in a shed enclosure and connecting piping/tubing. The air sparge well and monitor well IDs and latitude/longitude measurements are summarized below.

Well ID	Longitude	Latitude
Air Sparge Wells		
S301	81° 31' 58.57973" W	40° 48' 27.96716" N
S302	81° 31' 58.44275" W	40° 48' 27.84497" N
S303	81° 31' 58.29007" W	40° 48' 27.73259" N
S304	81° 31' 58.08939" W	40° 48' 27.56799" N
Monitor Well		
AS01	81° 31' 58.34035" W	40° 48' 27.70223" N

Injection Rate and Volume

The average injection rate during this reporting period was 50 cubic feet per minute (cfm). The total volume of ambient air injected into shallow groundwater during this reporting period was 1,078,980 cubic feet.

Injection Well Maintenance and Rehabilitation Activities

Injection well maintenance or rehabilitation was not necessary.

Groundwater Monitoring – Monitor Well AS01

The groundwater from monitor well AS01 was sampled on 8/13/03 and analyzed for volatile organic compounds (VOCs). The analytical results are pending and will be provided in the next monthly operating report.

ATTACHMENT 2

UIC Class V Well Inventory Form
and Figure 1

Ohio EPA

Underground Injection Control Class V Well Inventory Form as Required by Rule 3745-34-13 of the Ohio Administrative Code

Date: 9/30/03

Facility Name: World Kitchen, Inc.
County: Stark
Address: 359 State Street, NW
Massillon, Ohio 44648-0560
Latitude of facility: 40°48'27"
Longitude of facility: 81°32'01"
Phone number: (330) 832-5026

Name of Owner/Operator: Weston Solutions, Inc.
Address: 1400 Weston Way
West Chester, PA 19380
Phone number: (610) 701-7360
Project Manager: Tom Cornuet

Name of Legal Contact: Matt Basso (owner - Wyeth)
Address: 5 Giralda Farms
Madison, NJ 07940
Phone number: (973) 660-6726

Well Type: PVC **Depth of Well(s):** 40-42 ft bgs **Number of Wells:** 4
(See attached form.)

Injection System

Operating Status: active X inactive ___
Date of Completion of Well(s): 6/16/03 and 6/17/03
Maintenance and Inspection Schedule: Monthly or as needed
Nature of Fluid(s) Injected: Ambient air
Avg Inj. Rate: 50 cfm **Max Inj. Rate:** 59 cfm
Construction Narrative: See attached Figure 1.

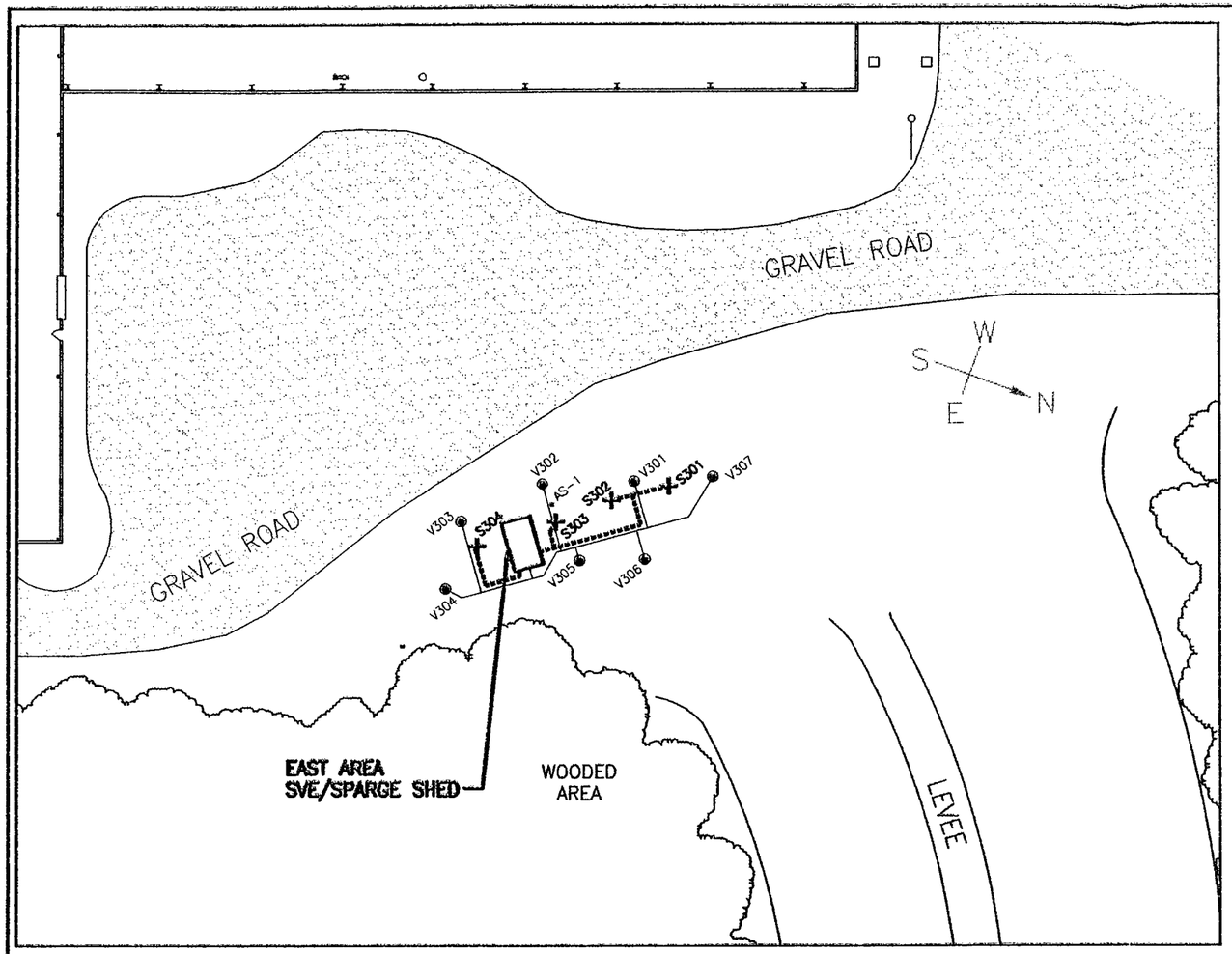
Comments:

Are floor drains present? yes ___ no X

Connected to: ☐ dry well ☐ surface discharge ☐ septic system ☐ holding tank
Comments: Ambient air is sparged into shallow groundwater to volatilize organic compounds. The volatilized compounds are collected by a soil vapor extraction (SVE) system.

If available please attach a sketch or map of site including the underground discharge system.

Please send completed form(s) to: Class V Coordinator, Division of Drinking and Ground Waters, Ohio Environmental Protection Agency, Lazarus Government Center, P.O. Box 1049, Columbus, Ohio 43216-1049

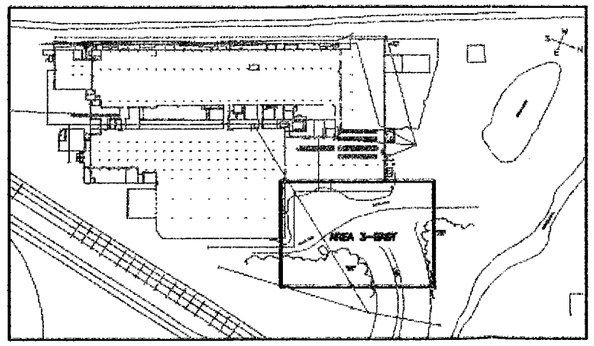


AREA 3-EAST

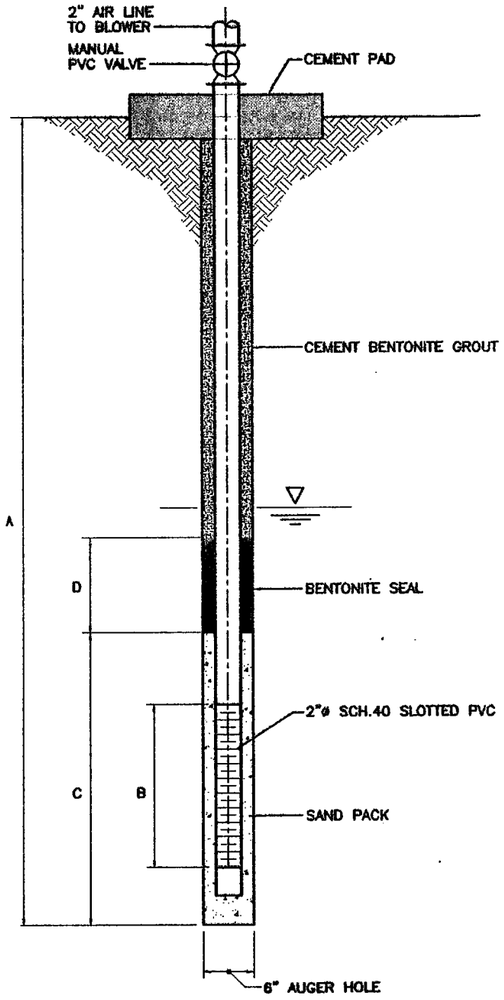
20 0 20 40

LEGEND

- SVE PIPING
- AS PIPING
- AS-1 GROUNDWATER MONITOR WELL
- SPARGE WELL
- SOIL VAPOR EXTRACTION VENT



KEY PLAN
N.T.S.



AIR SPARGE WELL
N.T.S.

NOTE:

VENTS, BUILDING AND SHED LOCATIONS BASED ON SURVEY DATA FROM BUCKEYE SURVEYING SERVICES, INC. DATED 27, AUGUST 2003.

WELL ID	"A" TOTAL DEPTH (FT. BGS.)	"B" SCREENED INTERVAL (FT. BGS.)	"C" SANDPACK INTERVAL (FT. BGS.)	"D" BENTONITE SEAL (FT. BGS.)	WELL DIAMETER (INCHES)
AIR SPARGE WELLS:					
S301	42	39–41	38–41	36–38	2
S302	40	38–40	37–40	35–37	2
S303	40	38–40	37–40	35–37	2
S304	42	37.5–39.5	38.5–39.5	34.5–36.5	2
MONITOR WELL:					
AS01	45	32–42	30–42	28–30	4

WELL ID	LONGITUDE	LATITUDE	ELEVATION
AIR SPARGE WELLS:			
S301	81° 31' 58.57973" W	40° 48' 27.96716" N	944.38914
S302	81° 31' 58.44275" W	40° 48' 27.84497" N	944.13992
S303	81° 31' 58.29007" W	40° 48' 27.73259" N	943.98199
S304	81° 31' 58.08939" W	40° 48' 27.56799" N	943.49530
MONITOR WELL:			
AS01	81° 31' 58.34035" W	40° 48' 27.70223" N	944.29255

FILE NO. G:\ACAD\PROJ\029940020080005 EXCD\figure 092603.dwg

NO.	DATE	APPD.	REVISION
NO.	DATE	APPD.	REVISION

WORLD KITCHEN, INC.
MASSILLON, OHIO
Prepared for Wyeth, Florham Park, New Jersey

WESTON SOLUTIONS

CHECKED	DATE	CLIENT APPROVALS	DATE
PROJ. ENG.			
PROJ. MGR.			
PROJ. MGR.			
APPROVED			
APPROVED			

SVE AND SPARGE SYSTEM LAYOUT
AREA 3--EAST
FIGURE 1

DRAWN A.B.H.	DATE 09/26/03	ENG. NO.	REV. NO.
SCALE AS NOTED	W.O. NO. 029940020080005	SHT. X OF X	

Weston Solutions, Inc.
1400 Weston Way
P.O. Box 2653
West Chester, Pennsylvania 19380
610-701-3000 • Fax 610-701-3186
www.westonsolutions.com

29 August 2003

Mr. Kenneth Bardo
Project Manager
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

Re: EKCO/World Kitchen, Massillon, Ohio, Facility
U.S. EPA I.D. No. OHD 045-205-424
Notification of the Remediation System Start-Up

Dear Mr. Bardo:

On behalf of our client Wyeth, and World Kitchen, Inc. (WKI), Weston Solutions, Inc. is submitting this notification of start-up of the new groundwater and soil remediation systems at the WKI facility located in Massillon, Ohio. The soil vapor extraction (SVE) and air sparging (AS) systems were started up during the week of 11 August 2003, and the pulse pumping was initiated during the week of 18 August 2003.

The system start-up is in advance of the 26 August 2003 scheduled deadline and fulfills the project schedule requirements set forth in Section IX, Paragraph 39b, and Table 1 of Attachment 2 of the Administrative Order on Consent. Based on the preliminary data, these new remediation systems have significantly increased the site wide contaminant mass removal rates and have accelerated the site remediation progress. We will present an overview of the system construction activities, system operation, and preliminary monitoring results at our site meeting scheduled for next Thursday 4 September 2003.

Should you have any questions regarding the progress of the site remediation please contact me at (610) 701-7360 or Mr. Matthew Basso at (973) 660-6726.

Very truly yours,

WESTON SOLUTIONS, INC.

Thomas Cornuet

Thomas Cornuet, P.G.
Project Manager

cc. M. Basso, Wyeth
J. Burman, WKI
M. Corbin, Weston
L. Bove, Weston

Weston Solutions, Inc.
1400 Weston Way
P.O. Box 2653
West Chester, Pennsylvania 19380
610-701-3000 • Fax 610-701-3186
www.westonsolutions.com

June 24, 2003

Mr. Kenneth Bardo
Project Manager
Unites States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

Re: EKCO/World Kitchen, Massillon, Ohio Facility
U.S. EPA I.D. No. OHD 045-205-424
Transmittal of Air Emission and UIC PTI/PTO Exemption Information Packages

Dear Mr. Bardo:

Enclosed please find one copy of the Final Information Submittal for the Soil Vapor Extraction/Air Sparge Remediation System at the World Kitchen, Inc. Massillon, Ohio Facility (Permit-By-Rule Exemption OAC 3745-31-03(4)(d)). The Canton City Health Department, Air Pollution Control has provided approval for the installation and operation of the soil vapor extraction (SVE)/air sparge (AS) system in accordance with this submittal.

Also enclosed please find one copy of the Application for Exemption from Formal Permitting of Class V Air Sparge Wells at the World Kitchen, Inc. Massillon, Ohio Facility. The Ohio EPA, Division of Drinking and Ground Waters (DDAGW), Underground Injection Control (UIC) Unit has provided approval for the installation and operation of the air sparge wells.

Should you have any questions regarding these documents, please contact me at (610) 701-7360.

Very truly yours,

WESTON SOLUTIONS, INC.

Thomas Cornuet

Thomas Cornuet, P.G.
Project Manager

Table 5
North Area Air Sampling Analytical Results (Upstream of Carbon)
World Kitchen, Inc. Massillon, Ohio Facility

Operational Week	1	2	7	8	11
Sample Date	8/13/2003	8/21/2003	9/25/2003	10/2/2003	10/20/2003
Sample Name	N00108130301	N00108210301	N00109250301[1]	N00110020301	N00110200301
Compound	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)
vinyl chloride	ND	2.5	ND	1.9	ND
chloroethane	ND	1.8	ND	ND	ND
1,1-dichloroethene	190.0	17.0	23.0	31.0	16.0
methylene chloride	65.0	2.6	ND	ND	ND
1,1-dichloroethane	180.0	80.0	33.0	44.0	20.0
cis-1,2-dichloroethene	ND	41.0	19.0	24.0	15.0
1,1,1-trichloroethane	3600.0	210.0	710.0	450.0	440.0
trichloroethene	820.0	71.0	110.0	140.0	86.0
toluene	ND	1.7	ND	0.6	ND
Total VOCs	**4855**	**428**	**895**	**692**	**577**
Detection Limit	50 ppmv	1 ppmv	5 ppmv	0.2 ppmv	10 ppmv

[1] Sample was incorrectly labelled in the field and results reported as E001-092503-01.
ND - Analyte was not detected at or above the reporting limit.

North Area Soil Gas Data from SVE System World Kitchen

Table 5
North Area Air Sampling Analytical Results (Upstream of Carbon)
World Kitchen, Inc. Massillon, Ohio Facility

Operational Week	12	15	17	19
Sample Date	10/30/2003	11/17/2003	12/2/2003	12/17/2003
Sample Name	N00110300301	N00111170301	N00112020301	N00112170301
Compound	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)
vinyl chloride	ND	ND	ND	ND
chloroethane	ND	ND	ND	ND
1,1-dichloroethene	32.0	ND	ND	ND
methylene chloride	ND	ND	ND	ND
1,1-dichloroethane	54.0	41.0	ND	28.0
cis-1,2-dichloroethene	42.0	ND	ND	ND
1,1,1-trichloroethane	1000.0	890.0	830.0	880.0
trichloroethene	240.0	170.0	200.0	210.0
toluene	ND	ND	ND	ND
Total VOCs	**1368**	**1101**	**1030**	**1118**
Detection Limit	20 ppmv	40 ppmv	20 ppmv	20 ppmv

ND - Analyte was not detected at or above the reporting limit.

Table 5
North Area Air Sampling Analytical Results (Upstream of Carbon)
World Kitchen, Inc. Massillon, Ohio Facility

Operational Week	22	24	27	29	31	33
Sample Date	1/5/2004	1/23/2004	2/9/2004	2/24/2004	3/10/2004	3/24/2004
Sample Name	N00101050401	N00101230401	N00102090401	N00102240401	N00103100401	N00103240401
Compound	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)
vinyl chloride	0	0	0	0	0	0
chloroethane	0	0	0	0	0	0
1,1-dichloroethene	0	0	0	0	0	4.3
methylene chloride	0	0	0	0	0	0
1,1-dichloroethane	16	50	17	17	20	12
cis-1,2-dichloroethene	0	27	0	0	0	3.9
1,1,1-trichloroethane	600	2800	480	340	440	150
trichloroethene	160	810	200	180	210	110
toluene	0	0	0	0	0	0
Total VOCs	*776*	*3687*	*697*	*537*	*670*	*280.2*
Detection Limit	10 ppmv	40 ppmv	10 ppmv	10 ppmv	10 ppmv	10 ppmv

Notes:

0 indicates that the analyte was not detected at or above the reporting limit

Table 5

North Area Air Sampling Analytical Results (Upstream of Carbon)
World Kitchen, Inc. Massillon, Ohio Facility

Operational Week	35	37	40	42	46
Sample Date	4/7/2004	4/21/2004	5/13/2004	5/28/2004	7/12/2004
Sample Name	N00104070401	N00104210401	N00105130401	N00105280401	N00107120401
Compound	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)
vinyl chloride	0	0	0	0	0
chloroethane	0	0	0	0	0
1,1-dichloroethene	2.5	0	0	1.4	0
methylene chloride	0	0	0	0	0
1,1-dichloroethane	11	5.3	3.7	6.8	3.8
cis-1,2-dichloroethene	3.9	2.3	0	2.8	1.7
1,1,1-trichloroethane	130	94	95	100	51
trichloroethene	69	42	49	44	28
toluene	0	0	0	0	0
Total VOCs	*216.4*	*143.6*	*147.7*	*155*	*84.5*
Detection Limit	10 ppmv	40 ppmv	10 ppmv	10 ppmv	10 ppmv

Notes:

0 indicates that the analyte was not detected at or above the reporting limit

Table 5
North Area Air Sampling Analytical Results (Upstream of Carbon)
World Kitchen, Inc. Massillon, Ohio Facility

Operational Week	61	65	72
Sample Date	10/8/2004	11/3/2004	12/10/2004
Sample Name	N0010080401	N00111030401	N00112100401
Compound	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)
vinyl chloride	0	0	0
chloroethane	0	0	0
1,1-dichloroethene	0.59	0	0.29
methylene chloride	0	0	0
1,1-dichloroethane	2	1.5	0.99
cis-1,2-dichloroethene	1.5	1.2	0.6
1,1,1-trichloroethane	26	20	16
trichloroethene	18	14	7.6
toluene	0	0	0
xylene	0	1.3	0
Total VOCs	*48.09*	*38*	*25.48*
Detection Limit	0.5 ppmv	0.5 ppmv	0.25 ppmv

Notes:

0 indicates that the analyte was not detected at or above the reporting limit

T[illegible]

North Area Air Sampling Analytical Results (Upstream of Carbon)
World Kitchen, Inc. Massillon, Ohio Facility

Operational Week	77	82	87
Sample Date	1/10/2005	2/14/2005	3/25/2005
Sample Name	N00101100501	N00102140501	N00103250501
Compound	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)
vinyl chloride	0	0	0
chloroethane	0	0	0
1,1-dichloroethene	0.33	0.034	0.1
methylene chloride	0	0	0
1,1-dichloroethane	0.82	0.085	0.3
cis-1,2-dichloroethene	0.54	0.081	0.24
1,1,1-trichloroethane	17	1.9	4.6
trichloroethene	6.1	0.83	1.9
toluene	0	0	0
xylene	0	0	0
Total VOCs	*24.79*	*2.93*	*7.14*
Detection Limit	0.25 ppmv	0.25 ppmv	0.25 ppmv

Notes:

0 indicates that the analyte was not detected at or above the reporting limit

North Area Air Sampling Analytical Results (Upstream of Carbon)
World Kitchen, Inc. Massillon, Ohio Facility

Operational Week	90	95
Sample Date	4/15/2005	5/16/2005
Sample Name	N00104150501	N00105160501
Compound	Concentration (ppmv)	Concentration (ppmv)
vinyl chloride	0	0
chloroethane	0	0
1,1-dichloroethene	0.099	0.1
methylene chloride	0.2	0.5
1,1-dichloroethane	0.29	0.35
cis-1,2-dichloroethene	0.26	0.36
1,1,1-trichloroethane	5.2	5.4
trichloroethene	2.4	2.7
toluene	0.074	0
xylene	0	0
Total VOCs	*8.523*	*9.41*
Detection Limit	0.25 ppmv	0.20 ppmv

Notes:

0 indicates that the analyte was not detected at or above the reporting limit

Table 5

North Area Air Sampling Analytical Results (Upstream of Carbon)
World Kitchen, Inc. Massillon, Ohio Facility

Operational Week	102	106	112
Sample Date	7/19/05	8/15/05	9/26/05
Sample Name	N00107190501	N00108150501	N00109260501
Compound	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)
vinyl chloride	0	0	0
chloroethane	0	0	0
1,1-dichloroethene	0.6	0.17	0.35
methylene chloride	0	0	0
1,1-dichloroethane	0.69	0.45	0.87
cis-1,2-dichloroethene	0.63	0.41	0.8
1,1,1-trichloroethane	12	7.7	14
trichloroethene	5.7	3.6	6.6
toluene	0.086	0.35	0.37
xylene	0	0	0
Total VOCs	*19.406*	*12.68*	*22.99*
Detection Limit	0.25 ppmv	0.25 ppmv	0.20 ppmv

Notes:

0 indicates that the analyte was not detected at or above the reporting limit

Table 5

North Area Air Sampling Analytical Results (Upstream of Carbon)

World Kitchen, Inc. Massillon, Ohio Facility

Operational Week	115	120	124
Sample Date	10/19/2005	11/22/2005	12/15/2005
Sample Name	N00110190501	N00111220501	N00112150501
Compound	Concentration (ppmv)	Concentration (ppmv)	Concentration (ppmv)
vinyl chloride	0	0	0
chloroethane	0	0	0
1,1-dichloroethene	0.27	0.17	0.097
methylene chloride	0	0	0
1,1-dichloroethane	0.71	0.4	0.22
cis-1,2-dichloroethene	0.73	0.33	0.17
1,1,1-trichloroethane	12	5.2	2.7
trichloroethene	6.2	1.8	1
toluene	0	0	0
xylene	0	0	0
Total VOCs	*19.91*	*7.9*	*4.187*
Detection Limit	0.20 ppmv	0.20 ppmv	0.13 ppmv

Notes:

0 indicates that the analyte was not detected at or above the reporting limit

FINAL
Information Submittal for Soil Vapor Extraction/Air Sparge Remediation System at the World Kitchen, Inc. Massillon, Ohio Facility

Permit-By-Rule Exemption OAC 3745-31-03(4)(d)

U.S. EPA ID #OHD 045-205-424

May 2003

Prepared for

WYETH
Madison, New Jersey

Prepared by

Weston Solutions, Inc.
1400 Weston Way
West Chester, Pennsylvania 19380

W.O. No. 02994.002.009

TABLE OF CONTENTS

LIST OF FIGURES

Figure **Page**

LIST OF ACRONYMS

AHP	American Home Products Corporation
AS	Air Sparging
CAP	Corrective Action Program
DAPC	Division of Air Pollution Control
DCA	Dichloroethane
DCE	Dichloroethene
EKCO	EKCO Housewares, Inc.
GAC	Granular Activated Carbon
OAC	Ohio Administrative Code
OEPA	Ohio Environmental Protection Agency
OVM	Organic Vapor Meter
PTI	Permit to Install
PTO	Permit to Operate
RCRA	Resource Conservation and Recovery Act
SVE	Soil Vapor Extraction
TCA	Trichloroethane
TCE	Trichloroethene
U.S. EPA	United States Environmental Protection Agency
VC	Vinyl Chloride
VOC	Volatile Organic Compound
WESTON	Weston Solutions, Inc.
WKI	World Kitchen, Incorporated

1. INTRODUCTION

Wyeth is in the preparation stage for conducting soil and groundwater remediation at the World Kitchen, Inc. (WKI) facility in Massillon, Ohio (U.S. EPA ID No. OHD 045-205-424). The remediation effort is being performed under the Resource Conservation and Recovery Act (RCRA) Corrective Action Program (CAP) and will comply with the requirements of an Administrative Order on Consent (Consent Order) between the United States Environmental Protection Agency (U.S. EPA) Region 5, WKI (the current facility owner), and Wyeth (the previous facility owner).

On behalf of Wyeth, Weston Solutions, Inc. (WESTON®) has prepared this information package for the soil vapor extraction (SVE)/groundwater air sparge (AS) remediation system at the WKI facility. According to Ohio Air Pollution Control Regulations, SVE systems may require a Permit to Install (PTI) New Sources as a new air contaminant source. However, under Ohio Administrative Code (OAC) 3745-31, which addresses PTIs, there is a list of exemptions for obtaining a PTI. In particular, there is a permit-by-rule exemption for SVE systems under OAC 3745-31-03(A)(4)(d).

Wyeth is submitting this document to the Canton City Health Department in compliance with OAC 3745-31-03(4)(d) of the Air Pollution Regulations. The Canton City Health Department, Division of Air Pollution Control, has regulatory authority to enforce the state air pollution control regulations. OAC 3745-31-03(4)(d) specifies PTI exemption conditions for soil vapor extraction remediation activities. It is stated that a permit-by-rule condition exists and an application for a permit to install a new source is not required for "soil-vapor extraction remediation activities located at facilities that have total combined emissions rates less than 15 pounds of organic compounds per day ... for a period of 18 months from the beginning of vapor extraction activities so long as the owner or operator provides the director with the following information prior to beginning actual construction":

(i) A description and location of the remediation site (Sections 1.1 and 1.2).

(ii) A description of the nature and type of contamination at the site (Section 2).

(iii) A description of the vapor extraction processes to be used in the remediation activities (Section 3).

(iv) An estimate of the air contaminant emissions in parts per million (ppm) by volume, pounds per hour and tons per year (Section 4).

(v) A description of the costs of the vapor control to be used to control emissions from the remediation activities (Section 4).

(vi) A description of the projected start date of the remediation project, a list of the project milestones and an estimate of how long the remediation activities will operate (Section 5).

(vii) A notice of when the soil-vapor extraction remediation activities begin, when major milestones are met and when the remediation activities are completed (Section 5).

The information required under OAC 3745-31-03(4)(d) is provided in sections of this document as noted above. This report is a followup to WESTON's meeting with the Division of Air Pollution Control (DAPC) in Canton on 12 February 2003, where we reviewed the provisions of the air permitting exemption and SVE/AS system design.

1.1 FACILITY OWNERSHIP

EKCO Housewares, Inc. (EKCO) owned and operated the Massillon, Ohio, facility until 1965, at which time it was acquired by American Home Products Corporation (AHP). AHP continued to operate the facility until 1984 when it was sold to the EKCO Group. In 1999, the EKCO Group sold the facility to WKI, the current owner of the property. AHP changed its name to Wyeth in March 2002.

1.2 FACILITY LOCATION AND DESCRIPTION

The facility is located at 359 State Street, ext NW, Massillon, Ohio. It occupies approximately 13 acres in the City of Massillon, Stark County, Ohio (Figure 1-1). The area surrounding the site is largely urban and industrial. Land use to the northwest is more rural with open space. The property is triangular in shape and lies approximately 1,500 feet west of the Tuscarawas River. The facility is bordered to the north by Newman Creek, while railroads border the property to the west and east, respectively. The railroad has numerous spurs and sidetracks adjacent to the plant, which are used for the storage of rail cars and track maintenance vehicles.

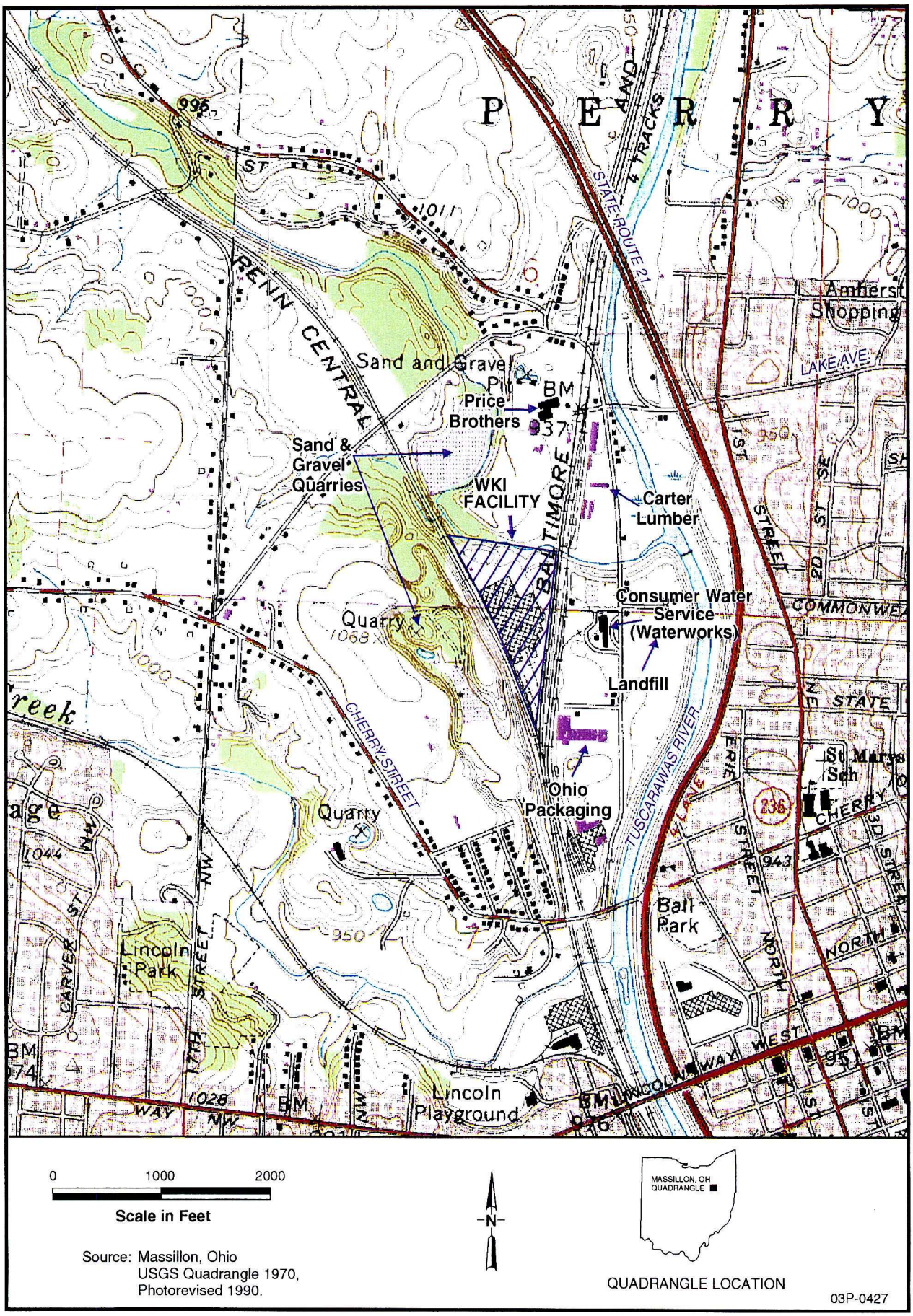


FIGURE 1-1 SITE LOCATION MAP
WKI MASSILLON, OHIO FACILITY

Manufacturing, warehousing, and shipping activities are conducted within a complex of interconnected buildings, which are shown collectively as the WKI Plant on Figure 1-2. A variety of businesses operate in the immediate vicinity of the plant, as shown in Figure 1-1.

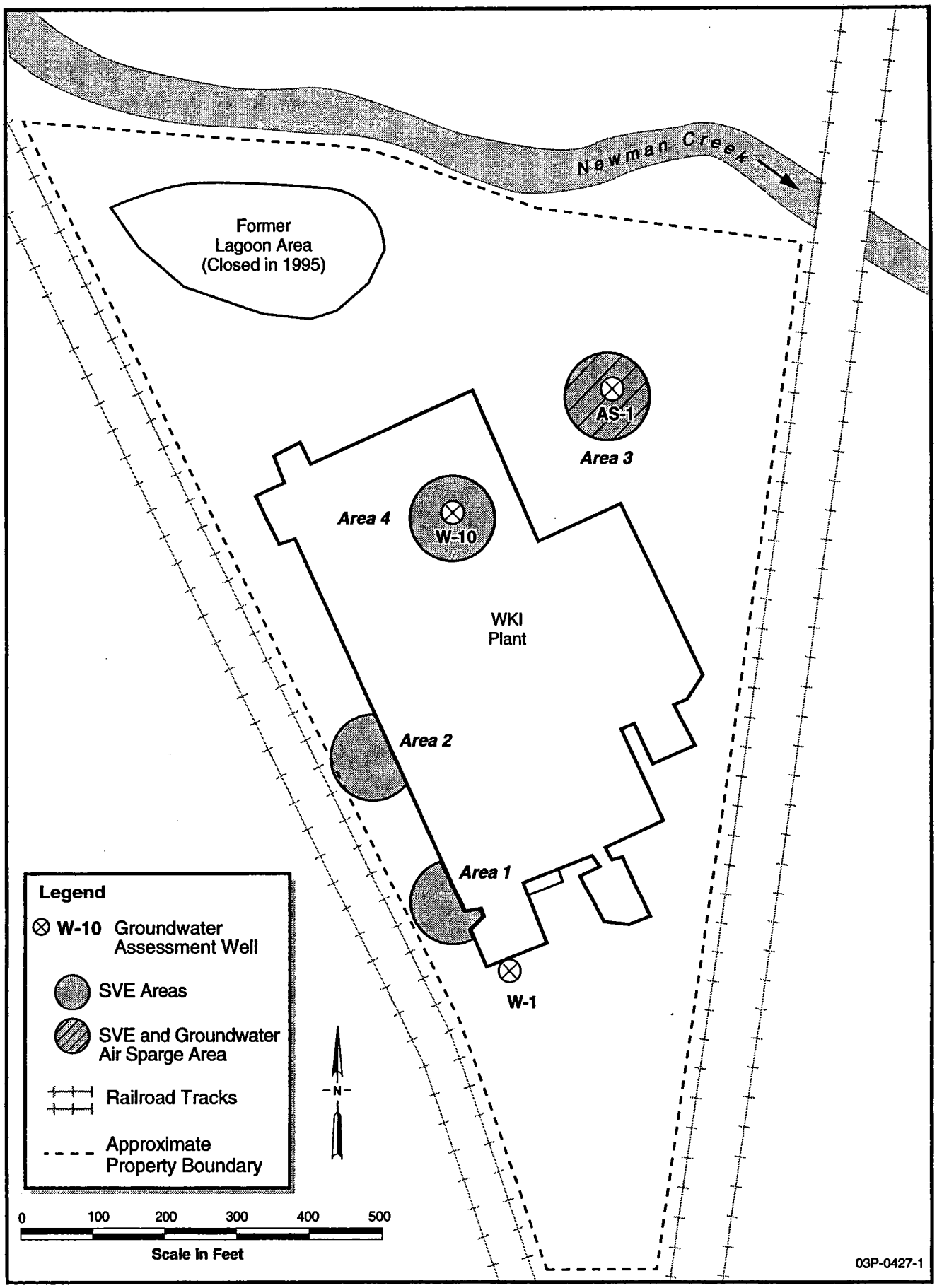


FIGURE 1-2 SOIL VAPOR EXTRACTION/GROUNDWATER AIR SPARGE AREAS WKI MASSILLON, OHIO FACILITY

2. SOIL AND GROUNDWATER

Volatile organic compounds (VOCs) primarily TCE, 1,1,1-TCA, and their breakdown products, have been detected in soil and groundwater at the facility. Their presence in soil and groundwater originated from past chlorinated solvent use during manufacturing activities. Specifically, TCE and 1,1,1-TCA were used for cleaning and degreasing. Their use was discontinued in 1994, when they were replaced with a Borax aqueous cleaner, which is still used at the facility.

Areas where VOCs exist in the soil and groundwater beneath the facility are shown in Figure 1-2 and include: inside the plant building near well W-10 (Area 4), outside the building along the western wall (Areas 1 and 2), and east of the northeastern corner of the plant building (Area 3).

2.1 SOIL REMEDIATION OBJECTIVES

The remediation objectives for the SVE systems in Areas 1, 2, 3, and 4 are:

- To remove VOCs from the soils in the treatment areas and to achieve the soil cleanup levels specified in accordance with the Consent Order Scope of Work. The specified soil cleanup levels are listed below:

VOC	*Soil Cleanup Level*
1,1-dichloroethylene (1,1-DCE)	120 µg/kg
1,2-dichloroethylene (1,2-DCE) (total)	1,500 µg/kg
1,1,1-trichloroethane (1,1,1-TCA)	6,140 µg/kg
trichloroethylene (TCE)	230 µg/kg

2.2 GROUNDWATER REMEDIATION OBJECTIVES

The remediation objective for the air sparge system is to remove VOCs from the shallow groundwater in the Area 3 SVE treatment area and to achieve the groundwater cleanup levels in accordance with the Consent Order Scope of Work in the proposed air sparging assessment well AS-1. The specified groundwater cleanup levels are listed below:

VOC	*Groundwater Cleanup Level*
1,1-dichloroethane (1,1-DCA)	810 µg/L
1,1-dichloroethylene (1,1-DCE)	7 µg/L
cis-1,2-dichloroethylene (*cis*-1,2-DCE)	70 µg/L
trans-1,2-dichloroethylene (*trans*-1,2-DCE)	100 µg/L
1,1,1-trichloroethane (1,1,1-TCA)	200 µg/L
trichloroethylene (TCE)	5 µg/L
vinyl chloride (VC)	2 µg/L

3. DESCRIPTION OF THE REMEDIATION SYSTEM

SVE will be implemented in Areas 1, 2, 3, and 4 to address the presence of VOCs in soil and air sparging will be implemented in Area 3 to address the presence of VOCs in shallow groundwater. Specifically, SVE will be implemented in areas where vadose (unsaturated zone) soils exhibit target compound concentrations greater than the soil cleanup objectives (presented in Section 2.1). SVE is a proven technology, which removes VOCs from soil by mechanically drawing air through the soil pore spaces. It is most successful in moderate to higher permeability soils where air can be readily drawn through soil pore spaces, but can be designed to address conditions where some lower permeability lenses or layers occur. As the air moves through the soil, VOCs volatilize into the subsurface air. A suction blower is used to create a negative pressure (vacuum) in a series of extraction vents that have been installed in an impacted area. This negative pressure causes air to be drawn from the subsurface unsaturated zone soil. The VOC-laden air stream is then collected and directly discharged to the atmosphere or treated prior to discharge, depending on the types and amounts of organic compounds in the air stream.

For application at the WKI facility, the 10 SVE vents in Areas 1 and 2 will be connected to a single suction blower. The 7 vents in Area 3 and 13 vents in Area 4 will be connected to a separate blower for each area, such that there will be three total SVE blower systems. The suction blowers will operate continuously except for occasional maintenance activities. The SVE vent layout in each of the four treatment areas and general collection piping layout connecting the vents to the blower are shown in Drawing 101 in Appendix A. SVE vent construction details are shown in Drawing 104 in Appendix A. Vents will be constructed of 4-inch diameter PVC piping with a screened/slotted lower portion for air entry. The piping is surrounded by gravel and sealed in a borehole constructed into the soil. Valves will be used to regulate the air flow from each vent.

Air sparging will also be implemented at Area 3 using four sparge points in conjunction with SVE to address shallow groundwater contamination beneath the Area 3 SVE area. The air sparging and SVE system in Area 3 will overlap so that sparged air can be collected by the SVE system.

Air sparging, also known as in situ air stripping, is a proven technology for treating groundwater containing VOCs. Air is injected by a blower into a series of groundwater well points. Sparge wells will be constructed of 1-inch diameter PVC piping with valving to regulate back pressure and flow. Details of the sparge point construction and layout of the points in Area 3 are shown in Drawing 104 in Appendix A. The sparge blower will operate continuously except for maintenance downtimes. VOCs dissolved in the groundwater will volatilize into the air as the air bubbles move through the impacted groundwater. When air sparging is combined with SVE, the SVE system collects the vapor-phase VOCs as they migrate upward through the vadose zone soil pore spaces.

3.1 SYSTEM PERFORMANCE

The SVE/air sparge remediation systems have been designed to perform as follows:

- The SVE/air sparge systems will operate continuously except for periodic maintenance activities.
- The SVE systems are designed to treat the overburden vadose zone soils in each of the four areas, which are depicted in Figure 1-2. In Areas 1 and 2, the overburden is approximately 10 feet thick and is unsaturated. In Area 3, the overburden is approximately 40 feet thick and groundwater is encountered at depths ranging from 22 to 35 ft bgs. In Area 4, the overburden is approximately 11 to 20 feet thick and is unsaturated. As such, the target SVE treatment zone extends to a depth below ground surface of approximately 10 feet in Areas 1 and 2 and 20 feet in Areas 3-East and 4. Blowers are sized to achieve sufficient system vacuum (a minimum of 6 to 8 inches of mercury (in Hg)) and flow rates (approximately 2 scfm/foot screen/vent).
- Emissions from the SVE systems will be controlled if they exceed *de minimis* values as specified by OEPA in OAC 3745-15-05. This is discussed further in Section 4.
- The air sparge system is designed to treat the shallow groundwater beneath Area 3-East. The blower is sized to achieve approximately 3 to 7 scfm injected per well with 10 to 15 feet of water column. Sparged air will be collected by the SVE system at Area 3-East.

3.2 MEASUREMENTS AND DATA COLLECTION

The system performance will be tracked through collection of field measurements and analytical data. Parameters such as air flow rate and vacuum at each system header and pressure and temperature at each blower outlet prior to emission control units will be continuously monitored and recorded by a data logging and control system. The data logging and control system can be

remotely accessed by personal computers to observe operating conditions and to control system operation. It will provide notification if the system is down and indicate the shutdown condition. Additional field vacuum/pressure and airflow readings periodically will be recorded by field personnel at various points in the system such as at individual vents using a site gauge or field instrument attached to a sample port. These measurements will be considered for flow balancing to maximize VOC removal.

Field instrument readings will be collected frequently during system start-up and less frequently as system operation time increases and approaches steady-state conditions. An organic vapor meter (OVM) will be used in the field as a screening measure to provide real-time data on air stream VOC content. Air samples also will be collected periodically by means of a Summa or other vacuum-type canister at the locations where flow rate is recorded so that an estimate of mass removal can be calculated. The air sample results will also be used to monitor the performance of the air emission control system as discussed in Section 4.

4. SVE EMISSION CONTROL

For each of the three SVE systems, soil vapor extracted from the subsurface will be directed to emission control consisting of two vapor phase granular activated carbon (GAC) units in series. A schematic diagram of the general layout of these units is shown in Figure 4-1.

The activated carbon units will be in place for system start-up and initial operation to control air emissions. Field instrument readings and air sampling will be used to track remediation progress. Initially, it is expected that the concentrations of VOCs in the extracted air will be elevated. After an initial period of operation (typically up to eight weeks), a significant decrease in VOC concentration occurs and approaches an asymptote-like steady-state value. When the operation of the SVE systems near completion, confirmation soil sampling is conducted to verify that the VOCs have been adequately removed from the soil in the target treatment areas. The results of the confirmation sampling are compared to the soil remediation objectives presented in Section 2.1 to verify that remediation is complete or to determine that further operation of the system is necessary and make adjustments for optimization of VOC removal.

Field instrument readings and air samples will be collected upstream of, in between, and at the air discharge from the carbon units. The upstream monitoring will occur at the header manifold for each system prior to the blower and the monitoring at the emission control units will occur at the sample port locations depicted in Figure 4-1.

During initial operations when the extracted air contains elevated VOC concentrations, field instrument readings and air samples will be collected frequently and as the VOC concentration decreases, on a less frequent basis. For example, an OVM will be used in the field as a screening measure to provide real-time data on air stream VOC content. During the first one to two weeks of operation, these OVM readings may be collected once per day. Initially, air samples will be collected on a weekly basis by means of a Summa or other vacuum-type canister for laboratory analysis. The monitoring data will be used to track the VOC concentrations and identify trends.

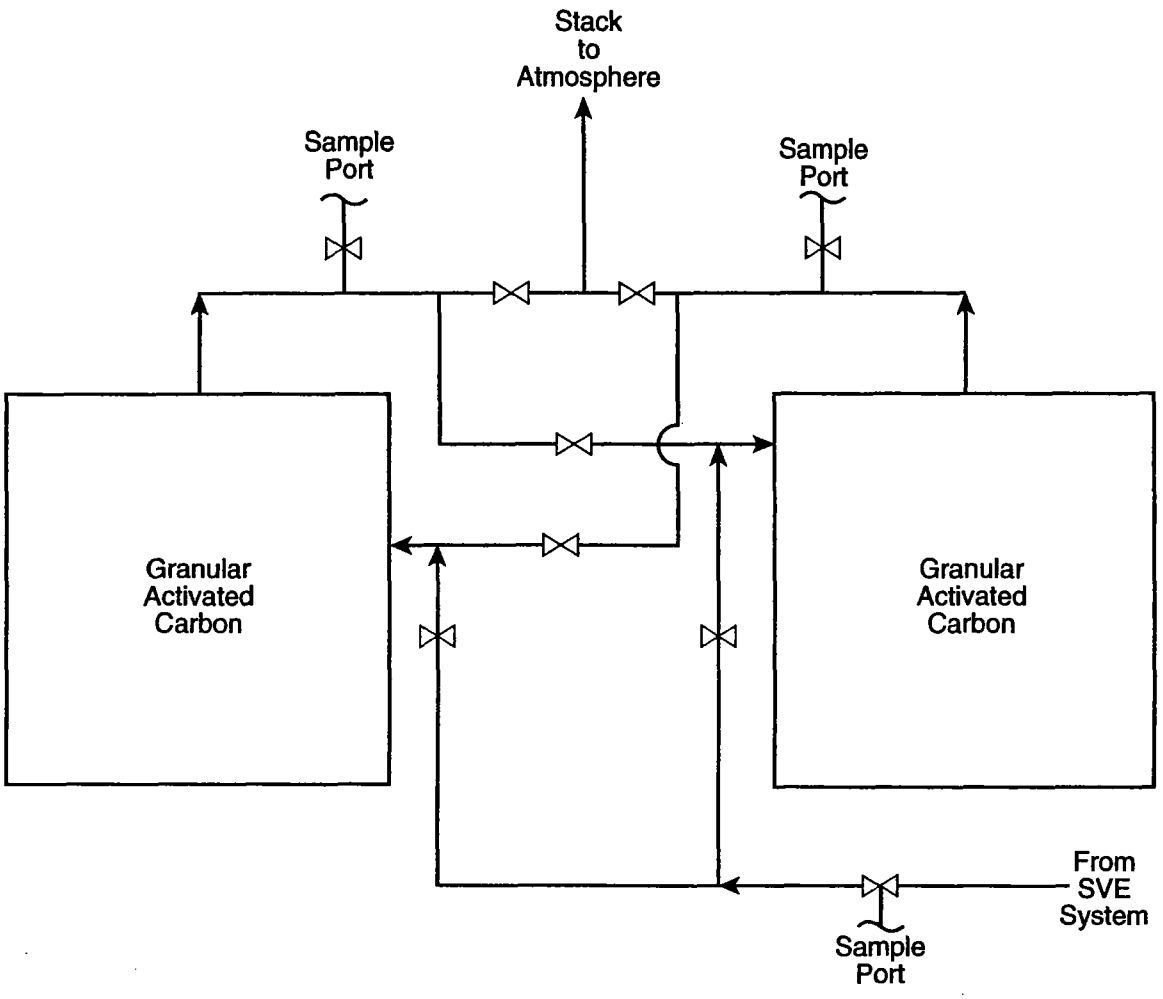


FIGURE 4-1 SCHEMATIC DIAGRAM OF A TYPICAL SVE EMISSION CONTROL SYSTEM WKI MASSILLON, OHIO FACILITY

The monitoring data will also be used to determine if and when breakthrough occurs on the upstream GAC unit. When this occurs, the downstream GAC unit will be valved to the upstream position and new or regenerated GAC will be placed in the downstream unit. By performing this activity, emission of VOCs to the atmosphere in excess of *de minimis* concentrations (*de minimis* concentrations are defined as less than 10 pounds per day of any criteria pollutant and less than 1 ton per year of any hazardous air pollutants [HAPs] in OAC 3745-15-05) and the SVE permit exemption limit of 15 lbs per day of organic compounds (in OAC 3745-31-03 (4)(d))will be prevented.

Finally, the monitoring data results will be used to adjust the frequency of monitoring, such that when the data indicate that VOC concentrations have stabilized in the extracted air, the frequency of monitoring will be decreased. WESTON will schedule a meeting with the Canton DAPC when the air sampling data indicate that the VOC concentration in the extracted air upstream of the GAC units (prior to treatment) has decreased to *de minimis* values. The purpose of the meeting will be to review remediation progress and the air sampling data prior to removal of the GAC from the system.

Vapor Phase Granular Activated Carbon Units

Numerous vendors offer self-contained units in various sizes (i.e., to contain 500, 1000, 2000, 3000, etc. pounds of GAC). The 1,000 or 3,000 pound GAC units would be used for the WKI facility SVE systems. These carbon units are easily transported and can be placed into position with a standard forklift. The containment vessels have standard inlet/outlet fittings for connection to the SVE system. When the carbon is spent, the vendor can provide a replacement unit or provide carbon removal and regeneration service. Cost per unit for 1,000-lb units are in the $4,000 to $5,000 range and the 3,000-lb units are in the $8,000 to $9,000 range.

5. SCHEDULE

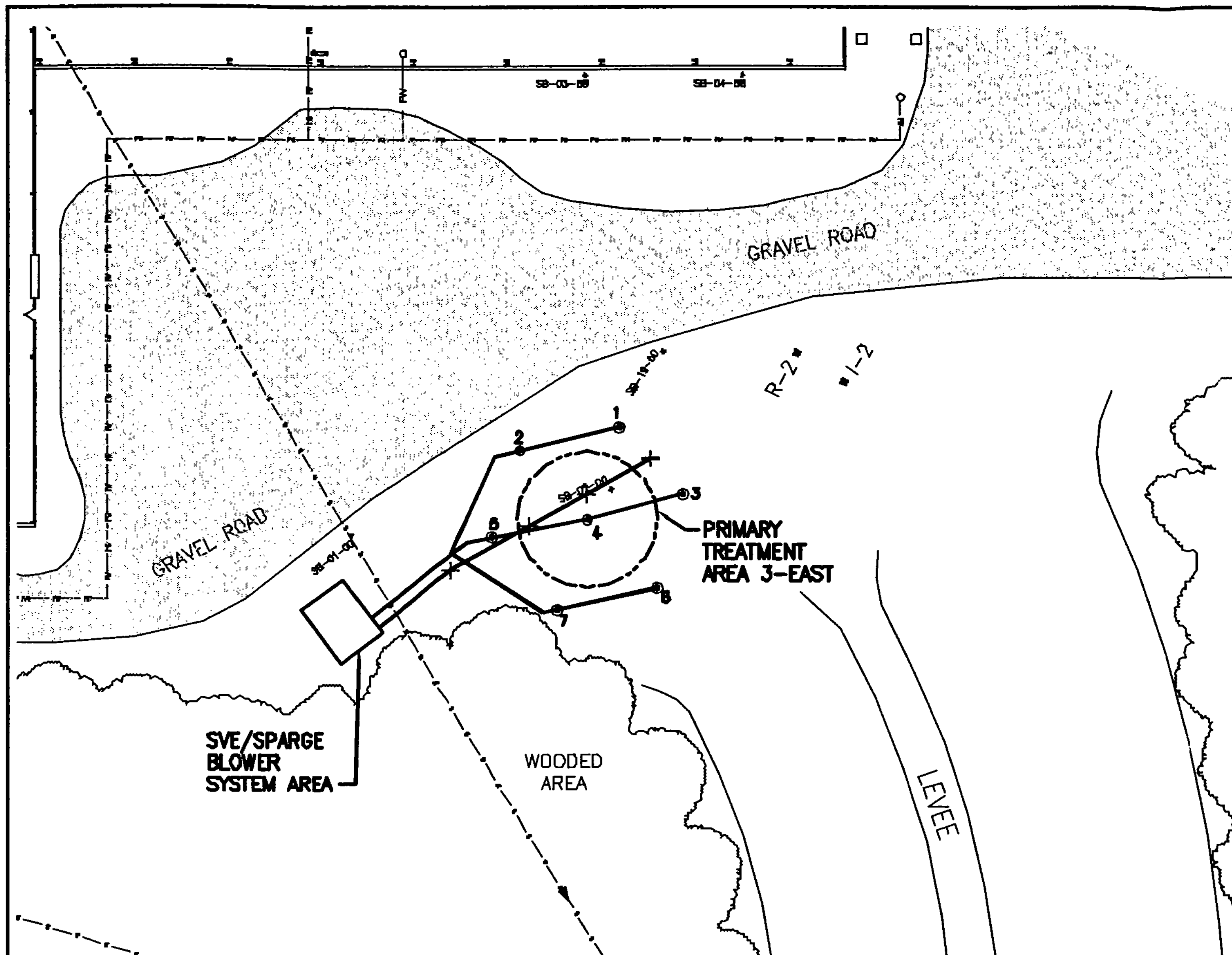
Significant project milestones are identified on the table below. Wyeth is currently procuring contracts for construction and installation of the SVE/groundwater air sparge system. The installation of SVE vents and groundwater sparge wells is expected to commence in May 2003. Installation of the SVE/air sparging blower units/air pollution control equipment and connection to the vents and sparge wells is scheduled for June. Startup operations are scheduled for July.

Remediation of Areas 1 and 2 on the western portion of the facility is expected to cleanup more quickly than the other two areas (possibly before 18 months). The time period for operation of SVE in Areas 3 and 4 is uncertain. It is noted that the PTI exemption is effective for up to 18 months after which a permit to install/permit to operate (PTI/PTO) would be required if *de minimis* values are not achieved in the untreated air extracted from the SVE vents. It is important to note that Wyeth will review the performance and progress of the three SVE systems after the first 12 months to evaluate system operation and determine subsequent requirements.

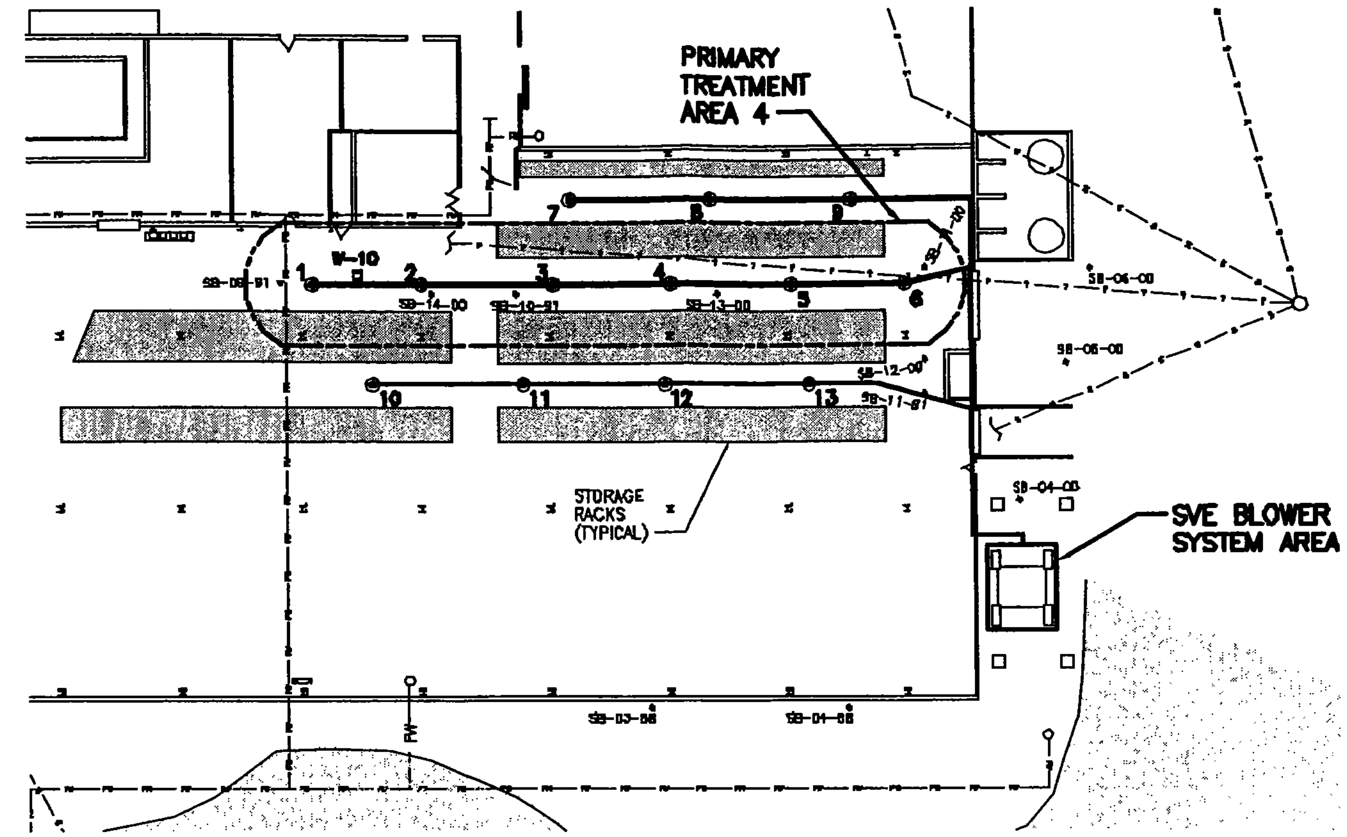
The Canton City Health Department, DAPC will be notified when the SVE remediation activities begin, when major milestones are met and when remedial activities are complete. WESTON plans on meeting with the DAPC on a periodic basis (i.e. semiannually) to review system performance and operations. We can discuss emission concentrations, quantity of VOCs being removed and other system operating parameters.

Project Milestones	**Time Period 2003**
1. Construction of the SVE and sparge units	May and June
2. Installation of SVE vents and air sparge wells	May
3. Ship SVE and sparge units to the site and hook up to vents and wells	June
4. Ship GAC units to site and hook up to blowers	June
5. System startup	July

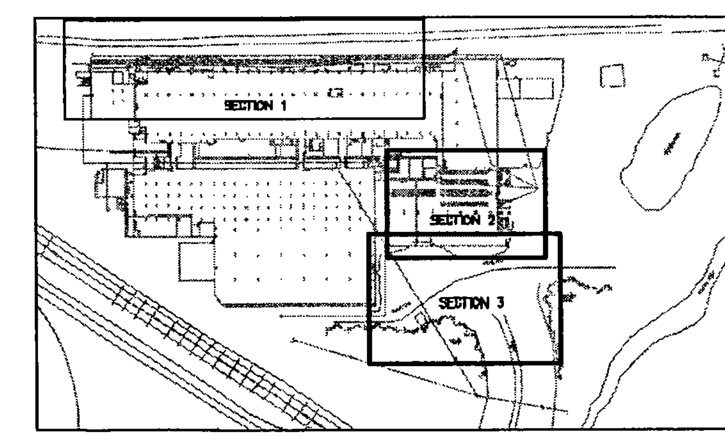
APPENDIX A
DRAWINGS



PARTIAL PLAN – SECTION 3



PARTIAL PLAN – SECTION 2



KEY PLAN
N.T.S.

NOTE:
SVE AND VENT PIPING LOCATIONS ARE APPROXIMATE AND WILL BE ADJUSTED TO ACCOMMODATE FIELD CONDITIONS.

LEGEND

- —FW— EXISTING FIRE WATER PIPING
- ++++++++ EXISTING RAIL LINE
- —S— EXISTING STORM SEWER PIPING
- —?— POSSIBLE PIPING
- —— SVE PIPING
- DS EXISTING DOWN SPOUT
- R-2 ■ EXISTING GROUNDWATER MONITOR WELL
- V-1D □ EXISTING RECOVERY WELL
- SOIL BORING LOCATION
- + PLANNED SPARGE WELL
- ● PLANNED SOIL VAPOR EXTRACTION VENT

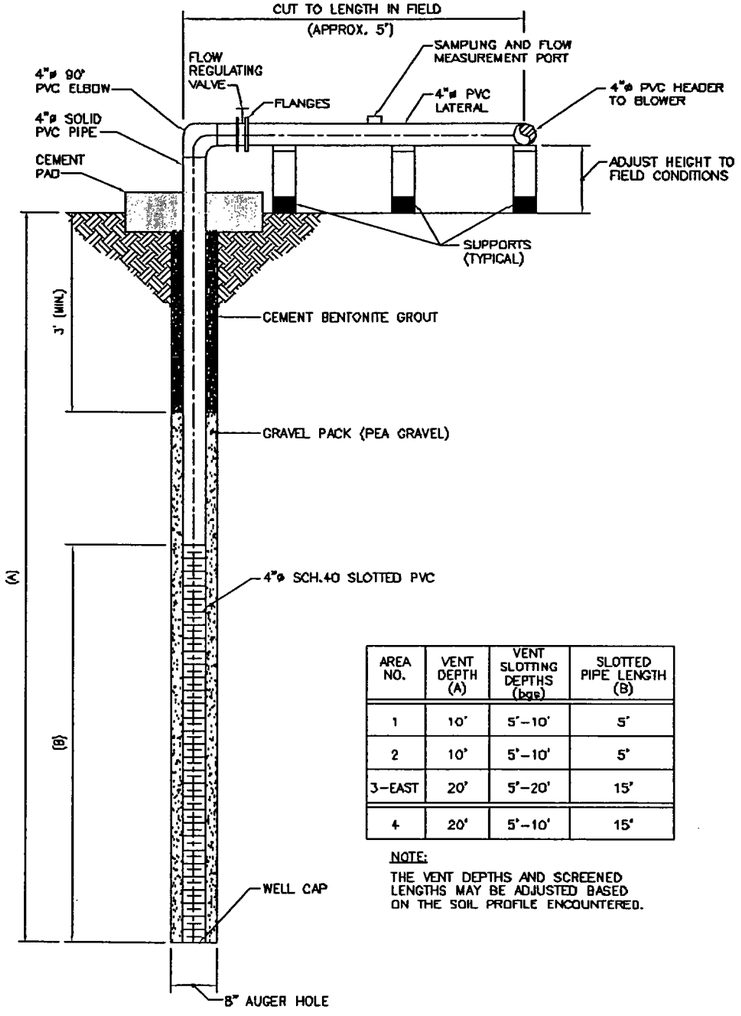
20 0 20 40
SCALE 1"=20'-0"

WORLD KITCHEN, INC.
MASSILLON, OHIO
Prepared for Wyeth, Florham Park, New Jersey

WESTON SOLUTIONS

SVE AND SPARGE SYSTEM LAYOUT
AREA 3-EAST & AREA 4

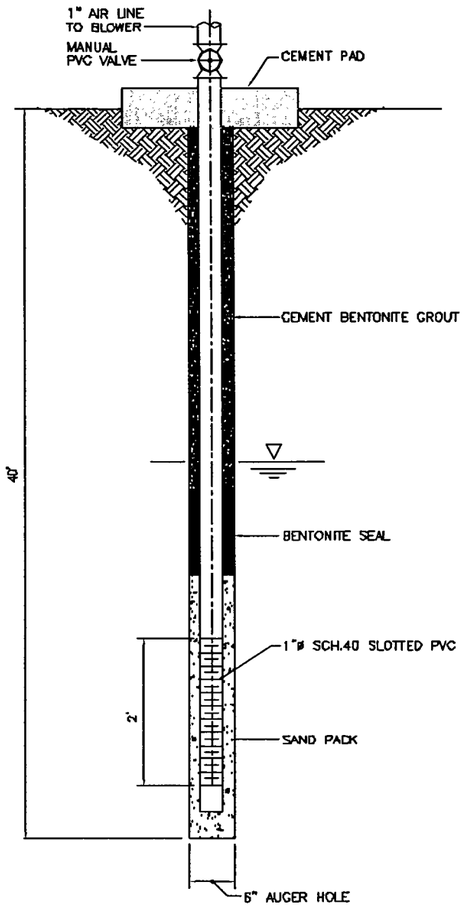
DRAWN	DATE	DWG. NO.
A.B.H.	11/4/02	103
SCALE 1"=20'-0"	W.O. NO. 02984D0200080005	



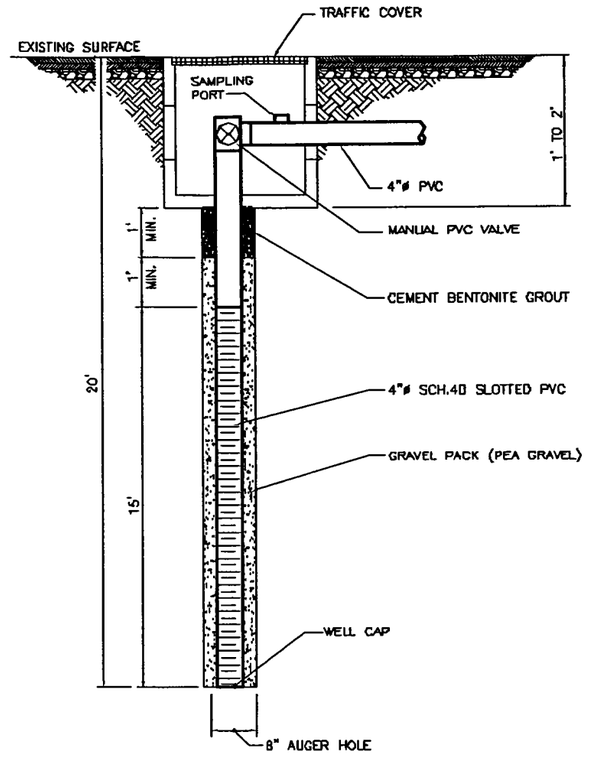
AREA NO.	VENT DEPTH (A)	VENT SLOTTING DEPTHS (bgs)	SLOTTED PIPE LENGTH (B)
1	10'	5'–10'	5'
2	10'	5'–10'	5'
3–EAST	20'	5'–20'	15'
4	20'	5'–10'	15'

NOTE:
THE VENT DEPTHS AND SCREENED LENGTHS MAY BE ADJUSTED BASED ON THE SOIL PROFILE ENCOUNTERED.

SOIL VAPOR EXTRACTION VENT (TYPICAL)
(AREAS 1, 2, & 3–EAST)
N.T.S.



AIR SPARGE WELL (TYPICAL)
(AREA 3–EAST)
N.T.S.



SOIL VAPOR EXTRACTION VENT (TYPICAL)
(AREA 4)
N.T.S.

FILE NO. G:\ADAPROJ\029940020088000 EXCO\100P.dwg

NO.	DATE	APPR.	REVISION

NO.	DATE	APPR.	REVISION

WORLD KITCHEN, INC.
MASSILLON, OHIO FACILITY
Prepared for Wyeth, Florham Park, New Jersey
WESTON SOLUTIONS
WEST CHESTER, PENNSYLVANIA

CHECKED	DATE	CLIENT APPROVAL	DATE
SECT. MGR.			
PROJ. ENG.			
PROJ. MGR.			
APPROVED			
APPROVED			

SVE VENT AND SPARGE WELL DETAILS

DRAWN	A.B.H.	DATE	11/4/02
DWG. NO.	104	REV. NO.	
SCALE	As shown	W.A. NO.	02994D0200900005
SHT.	x	OF	x

Application for Exemption from Formal Permitting of Class V Air Sparge Wells World Kitchen, Inc. Massillon, Ohio Facility

U.S. EPA ID #OHD 045-205-424

May 2003

Prepared for

WYETH
Madison, New Jersey

Prepared by

Weston Solutions, Inc.
1400 Weston Way
West Chester, Pennsylvania 19380

W.O. No. 02994.002.009

TABLE OF CONTENTS

Section **Page**

LIST OF FIGURES

Figure **Page**

LIST OF TABLES

LIST OF ACRONYMS

AHP	American Home Products Corporation
AS	Air Sparging
CAP	Corrective Action Program
DAPC	Division of Air Pollution Control
DCA	Dichloroethane
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DDAGW	Division of Drinking and Ground Water
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WESTON	Weston Solutions, Inc.
WKI	World Kitchen, Incorporated

1. INTRODUCTION

Wyeth is in the preparation stage for conducting soil and groundwater remediation at the World Kitchen, Inc. (WKI) facility in Massillon, Ohio (U.S. EPA ID No. OHD 045-205-424). The remediation effort is being performed under the Resource Conservation and Recovery Act (RCRA) Corrective Action Program (CAP) and will comply with the requirements of an Administrative Order on Consent (Consent Order) between the United States Environmental Protection Agency (U.S. EPA) Region 5, WKI (the current facility owner), and Wyeth (the previous facility owner).

On behalf of Wyeth, Weston Solutions, Inc. (WESTON®) has prepared this information package for the groundwater air sparge (AS) remediation system at the WKI facility. This air sparge system is the groundwater remediation portion of an overall soil and groundwater remediation program that will be implemented at the WKI facility in the summer of 2003. The groundwater remediation system involves the injection of ambient air into four shallow groundwater wells to volatilize organic compounds out of the groundwater and into the soil pore spaces of the overlying vadose zone. The volatilized organic compounds will then be drawn out of the soil pore spaces by a soil vapor extraction (SVE) system that will be operating in the vadose zone overlying the groundwater air sparge treatment area.

The injection of fluids into the subsurface through a Class V well may require a Permit to Install (PTI) and/or a Permit to Operate (PTO). The Ohio Environmental Protection Agency (OEPA) Division of Drinking and Groundwater (DDAGW) Undergound Injection Control (UIC) Unit has regulatory authority concerning this issue. Typically, Class V wells are shallow wells used to inject a variety of non-hazardous fluids directly below the land surface into or above formations that contain an underground source of drinking water (Ohio Administrative Code (OAC) 3745-34-04(E)). For the WKI facility, the injected fluid is ambient air.

It is possible to apply for and receive an exemption from formal permitting procedures for Class V well aquifer remediation projects. Rather than completing Class V PTI and PTO applications, the DDAGW UIC Unit allows the applicant to submit a plan that contains specified information.

Wyeth is submitting this document to OEPA DDAGW UIC Unit that contains the requested information including the following:

- A description of the nature of the spill/release (Section 2).
- A hydrogeologic site description, including groundwater flow direction (Section 1.3).
- A detailed description of the proposed remediation action (Section 3).
- A complete analysis of fluids to be injected (Section 3).
- The results of groundwater monitoring (Section 2).
- The name of the Ohio EPA staff member overseeing any related site activities (Section 1).

The requested information is provided in sections of this document as noted above. This report is also a followup to phone conversations between WESTON and Ms. Valerie Orr of the UIC Unit in October 2002 where the information requirements were reviewed.

It is important to note that the U.S. EPA Region V is providing oversight for this project. Mr. Ken Bardo is the U.S. EPA RCRA Project Manager. However, certain aspects of the project require OEPA involvement and approval such as this UIC information submittal for the air sparge system. A similar document entitled *Information Submittal for Soil Vapor Extraction/Air Sparge Remediation System at the World Kitchen, Inc. Massillon, Ohio Facility: Permit-By-Rule Exemption OAC 3745-31-03(4)(d)*, has been prepared by WESTON on behalf of Wyeth for SVE emissions in accordance with the state air pollution control regulations. The SVE information document is being submitted to the Canton City Health Department Division of Air Pollution Control (DAPC). The Canton City Health Department DAPC has regulatory authority to enforce the state air pollution control regulations. Copies of documents submitted to the state agencies are also provided to the U.S. EPA Project Manager as required under the Consent Order.

1.1 FACILITY OWNERSHIP

EKCO Housewares, Inc. (EKCO) owned and operated the Massillon, Ohio, facility until 1965, at which time it was acquired by American Home Products Corporation (AHP). AHP continued to operate the facility until 1984 when it was sold to the EKCO Group. In 1999, the EKCO Group sold the facility to WKI, the current owner of the property. AHP changed its name to Wyeth in March 2002.

1.2 FACILITY LOCATION AND DESCRIPTION

The facility is located at 359 State Street, ext NW, Massillon, Ohio. It occupies approximately 13 acres in the City of Massillon, Stark County, Ohio (Figure 1-1). The area surrounding the site is largely urban and industrial. Land use to the northwest is more rural with open space. The property is triangular in shape and lies approximately 1,500 feet west of the Tuscarawas River. The facility is bordered to the north by Newman Creek, while railroads border the property to the west and east, respectively. The railroad has numerous spurs and sidetracks adjacent to the plant, which are used for the storage of rail cars and track maintenance vehicles.

Manufacturing, warehousing, and shipping activities are conducted within a complex of interconnected buildings, which are shown collectively as the WKI Plant on Figure 1-2. A variety of businesses operate in the immediate vicinity of the plant, as shown in Figure 1-1.

1.3 SUMMARY OF SITE CHARACTERISTICS

This section presents a summary of the site geology and hydrogeology. The site characteristics are fully discussed in the *RCRA Facility Investigation (RFI) Report* (WESTON, 1993) and the *Corrective Measures Study* (WESTON, 1993).

1.3.1 Geology

The facility is situated on the western flank of a glacial valley that extends to the north and south and was carved from Pennsylvanian age sedimentary rocks during the Pleistocene glaciation. Prior to the construction of the facility in 1945, a cover of fill material was used to level the natural glacially-formed topography at the building site. Beneath the fill, the glacially deposited

FIGURE 1-1 SITE LOCATION MAP
WKI MASSILLON, OHIO FACILITY

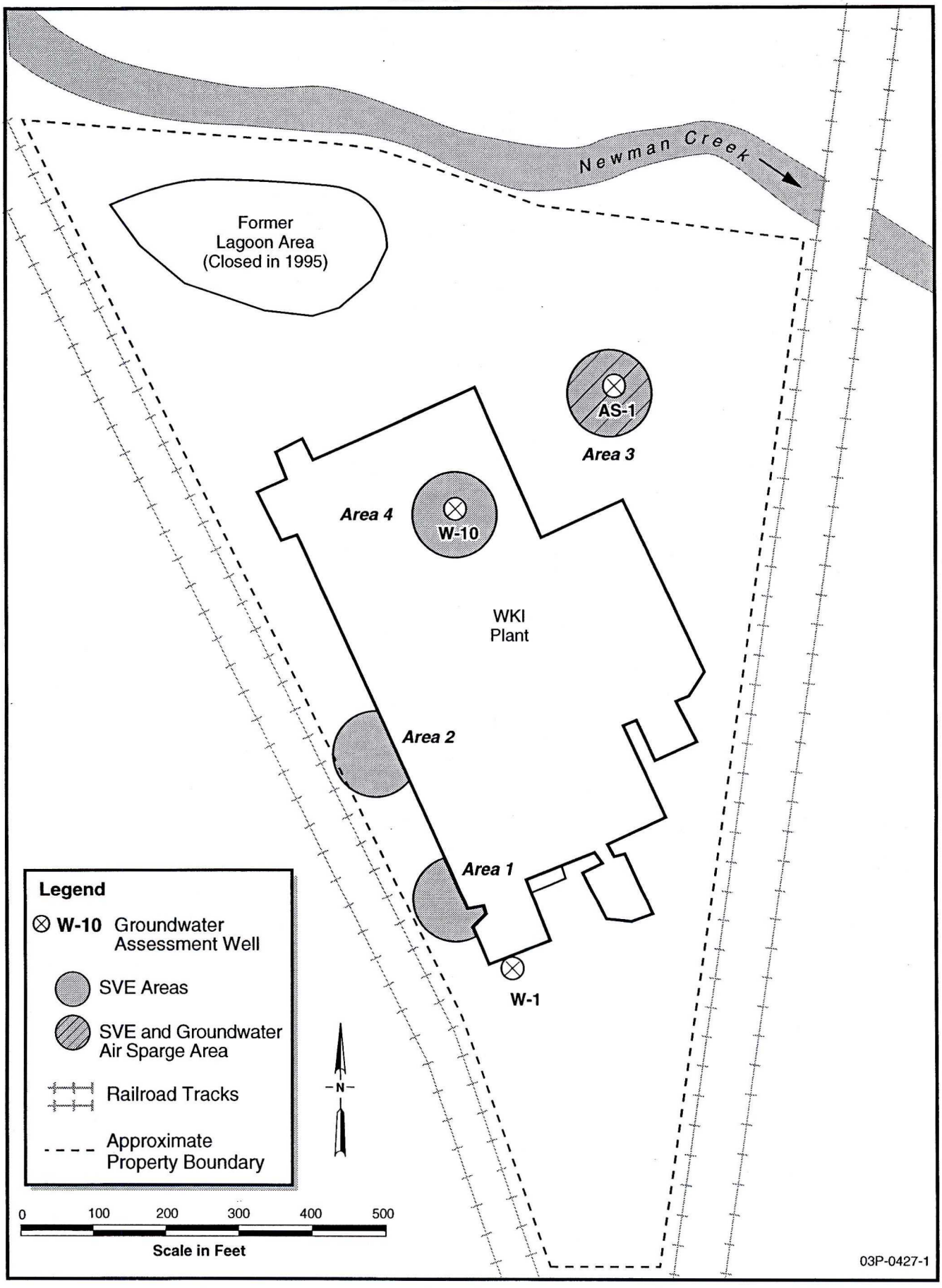


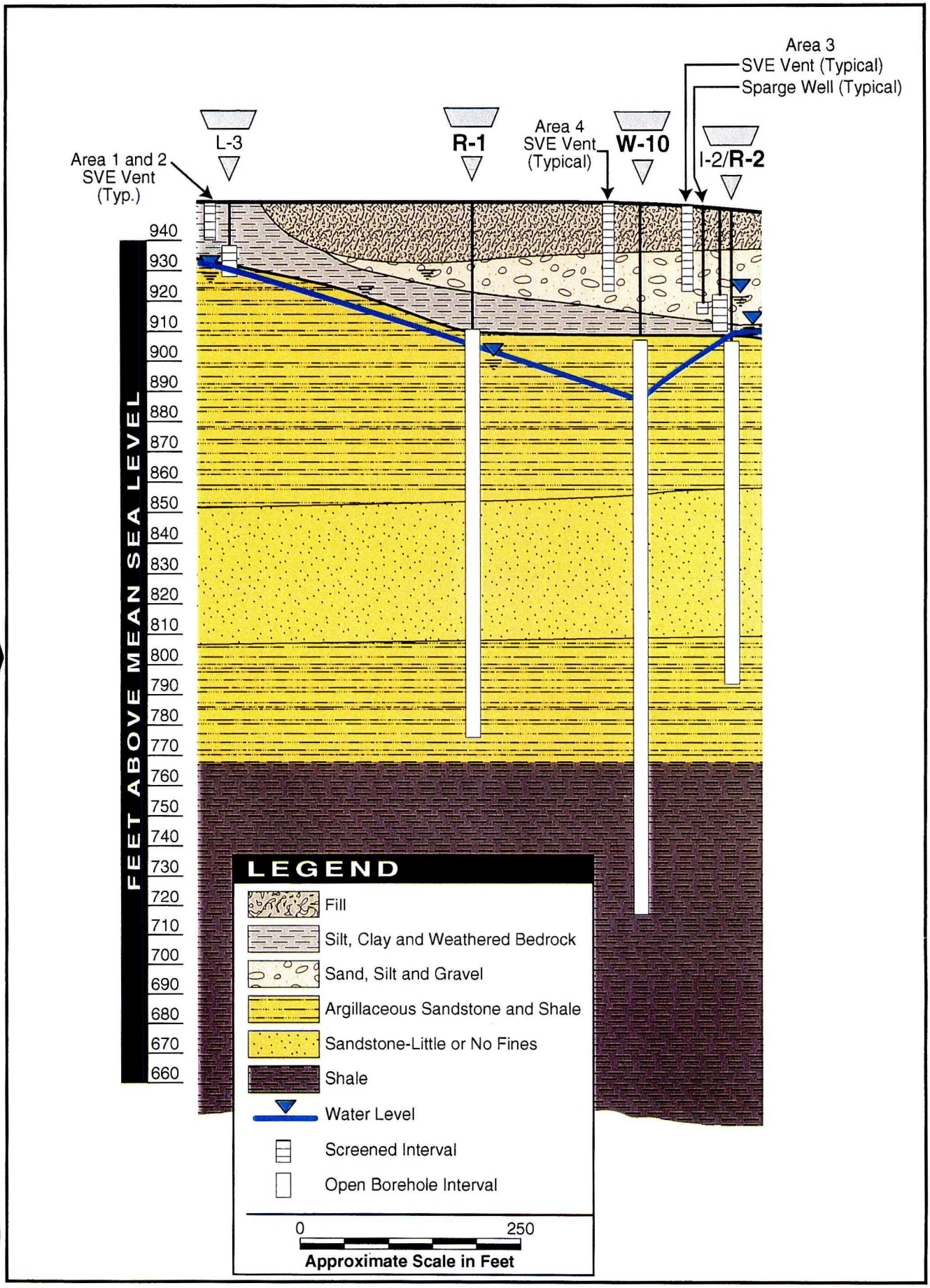
FIGURE 1-2 SOIL VAPOR EXTRACTION/GROUNDWATER AIR SPARGE AREAS WKI MASSILLON, OHIO FACILITY

sediments form a thin veneer 15 to 20 feet thick in the western portion of the site where bedrock is shallow. The sediments infill the glacial valley to the east, reaching a maximum thickness of approximately 110 feet at the eastern side of the property boundary.

Based on the geologic strata encountered during drilling, these units were identified and correlated between monitor wells at the site. As shown in the Figure 1-3 geologic cross section, some relatively higher permeability sand and gravel units were identified, which are separated by relatively lower permeability silt and clay units. Underlying the glacial sediments, bedrock is encountered at its highest elevation in the northwestern portion of the site and slopes to the east at an approximate 17° angle. Bedrock encountered at the site consists of interbedded layers of sandstone, argillaceous sandstone, and shale. The shallowest bedrock unit encountered consists of an interbedded low permeability shale and argillaceous sandstone, which is underlain by a highly permeable, well sorted sandstone. The sandstone unit is the primary bedrock water-bearing unit at the site. Below the sandstone is another low permeability interbedded shale and argillaceous sandstone unit, which is directly underlain by shale.

1.3.2 Hydrogeology

Groundwater contour maps for the site indicate that the pumping of production wells W-1 and W-10 appreciably affects the groundwater flow in the shallow overburden and the bedrock water-bearing zones, creating a drawdown cone around wells W-1 and W-10. As a result of the pumping, the groundwater in the water-bearing zones under the entire site is flowing directly toward production wells W-1 and W-10. Volatile organic compounds (VOCs) in the groundwater at the site are being recovered by the site production wells and are being treated by an on-site air stripper system. Groundwater contour maps for shallow overburden and bedrock groundwater were developed using November 2002 water level data and are presented in Figures 1-4 and 1-5.



02P-1570-21

FIGURE 1-3 SITE GEOLOGY AND REMEDIATION WELL SCHEMATIC WORLD KITCHEN, INC. (WKI) MASSILLON, OHIO FACILITY

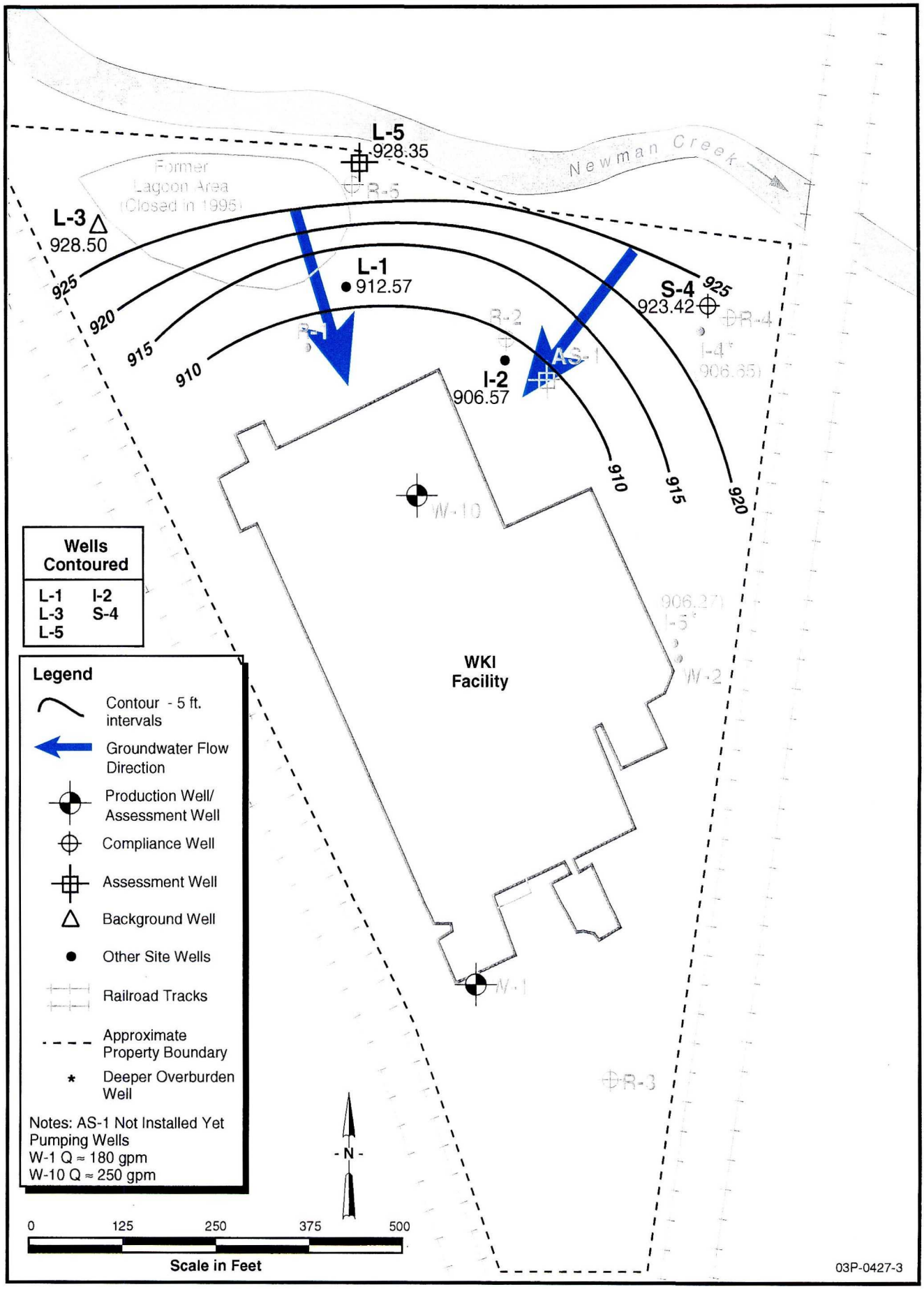


FIGURE 1-4 SHALLOW OVERBURDEN GROUNDWATER CONTOUR MAP – 5 NOVEMBER 2002 WKI MASSILLON, OHIO FACILITY

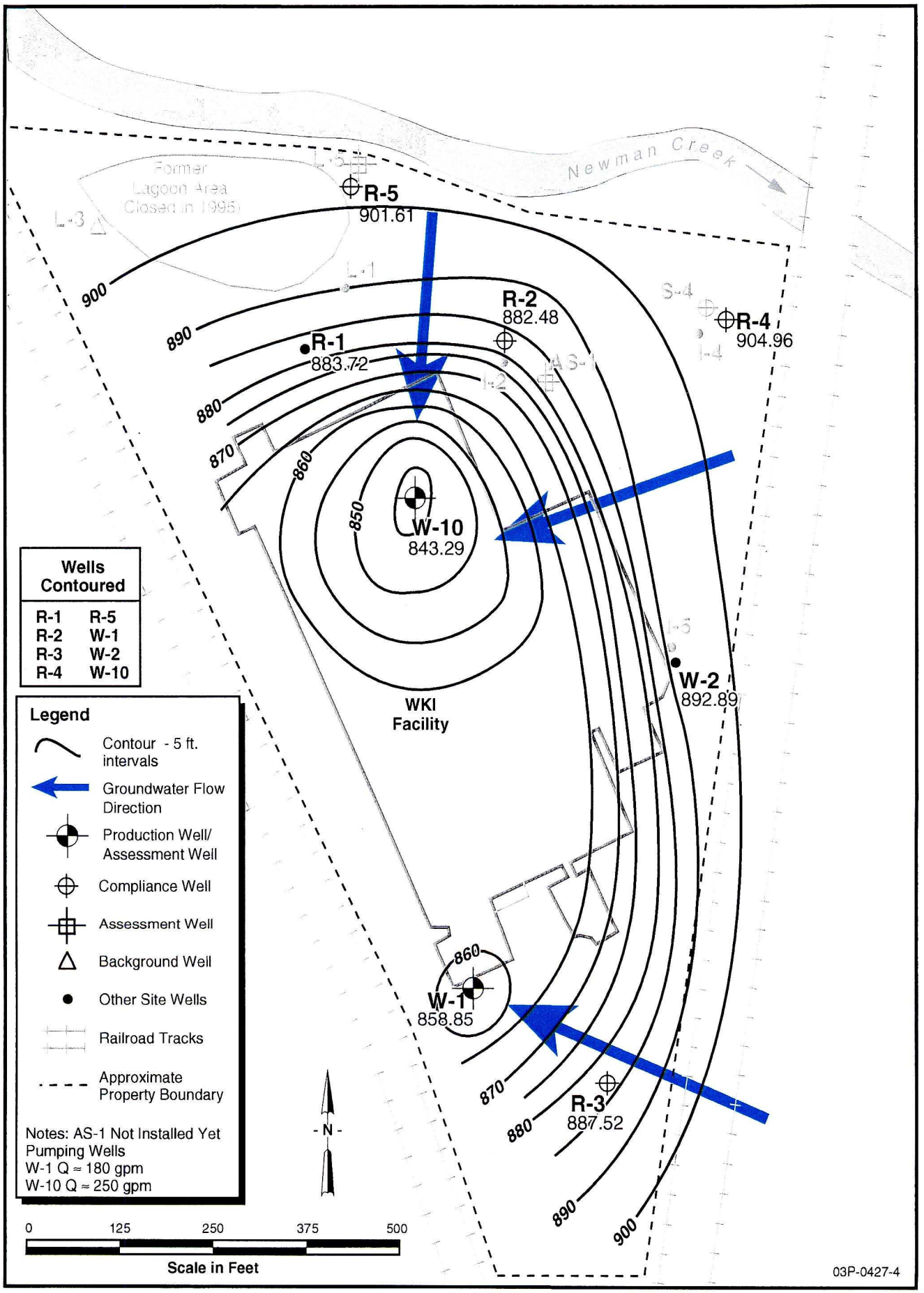


FIGURE 1-5 BEDROCK GROUNDWATER CONTOUR MAP – 5 NOVEMBER 2002
WKI MASSILLON, OHIO FACILITY

2. SITE CONDITIONS

VOCs primarily TCE, 1,1,1-TCA, and their breakdown products, have been detected in soil and groundwater at the facility. Their presence in soil and groundwater originated from past chlorinated solvent use during manufacturing activities. Specifically, TCE and 1,1,1-TCA were used for cleaning and degreasing. Their use was discontinued in 1994, when they were replaced with a Borax aqueous cleaner, which is still used at the facility.

Areas where VOCs exist in the soil and groundwater beneath the facility are shown in Figure 1-2 and include: inside the plant building near well W-10 (Area 4), outside the building along the western wall (Areas 1 and 2), and east of the northeastern corner of the plant building (Area 3). Table 2-1 provides a summary of the November 4, 2002 groundwater analytical results.

The remediation objectives for the SVE systems in Areas 1, 2, 3, and 4 are to remove VOCs from the soils in the treatment areas and to achieve the soil cleanup levels specified in accordance with the Consent Order Scope of Work. The remediation objective for the air sparge system is to remove VOCs from the shallow groundwater in the Area 3 treatment area and to achieve the groundwater cleanup levels in the proposed air sparging assessment well AS-1 in accordance with the Consent Order Scope of Work. The specified groundwater cleanup levels are listed below:

VOC	*Groundwater Cleanup Level*
1,1-dichloroethane (1,1-DCA)	810 µg/L
1,1-dichloroethylene (1,1-DCE)	7 µg/L
cis-1,2-dichloroethylene (*cis*-1,2-DCE)	70 µg/L
trans-1,2-dichloroethylene (*trans*-1,2-DCE)	100 µg/L
1,1,1-trichloroethane (1,1,1-TCA)	200 µg/L
trichloroethylene (TCE)	5 µg/L
vinyl chloride (VC)	2 µg/L

Table 2-1
Groundwater Analytical Results - November 4, 2002
WKI Massillon, Ohio Facility

Analyte	Well ID									
	L-3	L-5	R-2	R-3	R-3 D	R-4	R-5	S-4	W-1	W-10
1,1,1-Trichloroethane (µg/L)	1U	1U	1U	**5.7**	**5.6**	1U	1U	1U	**7.8**	**320**
1,1-Dichloroethane (µg/L)	1U	**9.3**	**9.6**	**54**	**52**	**2.5**	**2.1**	1U	**33**	**56**
1,1-Dichloroethene (µg/L)	1U	1U	**0.75J**	**4.5**	**4.3**	1U	1U	1U	**3.3**	**7.6**
cis-1,2-Dichloroethene (µg/L)	1U	**13**	**8.2**	**4.5**	**4.5**	1U	**10**	1U	**8.2**	**89**
trans-1,2-Dichloroethene (µg/L)	1U	1U	1U	1U	1U	1U	1U	1U	1U	**1.1**
Trichloroethene (µg/L)	1U	1U	**1.8**	**40**	**37**	1U	**1**	**1.5**	**31**	**100**
Vinyl chloride (µg/L)	1U	**28**	1U	1U	1U	1U	**3.2**	1U	1U	**1**

Notes:
Bold values are detected concentrations.
D – Duplicate sample.
U – Analyte was not detected at or above the given reporting limit.
J – Estimated value below the reporting limit.

3. DESCRIPTION OF THE REMEDIATION SYSTEM

SVE will be implemented in Areas 1, 2, 3, and 4 to address the presence of VOCs in soil and air sparging will be implemented in Area 3 to address the presence of VOCs in shallow groundwater. Specifically, SVE will be implemented in areas where vadose (unsaturated zone) soils exhibit target compound concentrations greater than the soil cleanup objectives. SVE removes VOCs from soil by mechanically drawing air through the soil pore spaces. As the air moves through the soil, VOCs volatilize into the subsurface air. A suction blower is used to create a negative pressure (vacuum) in a series of extraction vents that have been installed in an impacted area. This negative pressure causes air to be drawn from the subsurface unsaturated zone soil. The VOC-laden air stream is then collected and directly discharged to the atmosphere or treated prior to discharge, depending on the types and amounts of organic compounds in the air stream.

Air sparging will also be implemented at Area 3 using four sparge points in conjunction with SVE to address shallow groundwater contamination beneath the Area 3 SVE area. The air sparging and SVE system in Area 3 will overlap so that sparged air can be collected by the SVE system.

Air sparging, also known as in situ air stripping, is a proven technology for treating groundwater containing VOCs. Ambient air is injected by a blower into a series of groundwater well points. Sparge wells will be constructed of 1-inch diameter PVC piping with valving to regulate back pressure and flow. Details of the sparge point construction and layout of the points in Area 3 are shown in Drawings 103 and 104 in Appendix A. The sparge blower will operate continuously except for maintenance downtimes. VOCs dissolved in the groundwater will volatilize into the air as the air bubbles move through the impacted groundwater. When air sparging is combined with SVE, the SVE system collects the vapor-phase VOCs as they migrate upward through the vadose zone soil pore spaces.

3.1 SYSTEM PERFORMANCE

The SVE/air sparge remediation systems have been designed to perform as follows:

- The SVE/air sparge systems will operate continuously except for periodic maintenance activities.
- The SVE systems are designed to treat the overburden vadose zone soils in each of the four areas, which are depicted in Figure 1-2. In Area 3, the overburden is approximately 40 feet thick and groundwater is encountered at depths ranging from 22 to 35 ft bgs. As such, the target SVE treatment zone extends to a depth below ground surface of approximately 20 feet in Area 3.
- The air sparge system is designed to treat the shallow groundwater beneath Area 3. The blower is sized to inject approximately 3 to 7 scfm of ambient air per well into the shallow groundwater assuming 10 to 15 feet of water column. Sparged air will be collected by the SVE system at Area 3.

3.2 REPORTING

Within 30 days of installation of the Class V sparge wells, Wyeth will complete the Underground Injection Control Class V Well Inventory Form as required by OAC 3745-34-13 and submit it to the Class V Coordinator, OEPA DDAGW. A copy of this form is provided in Appendix B.

Once operations commence, monthly (or other agreed upon frequency) operating reports will be submitted to the OEPA DDAGW, UIC Unit. As required by the DDAGW, these reports must contain at a minimum, the following information:

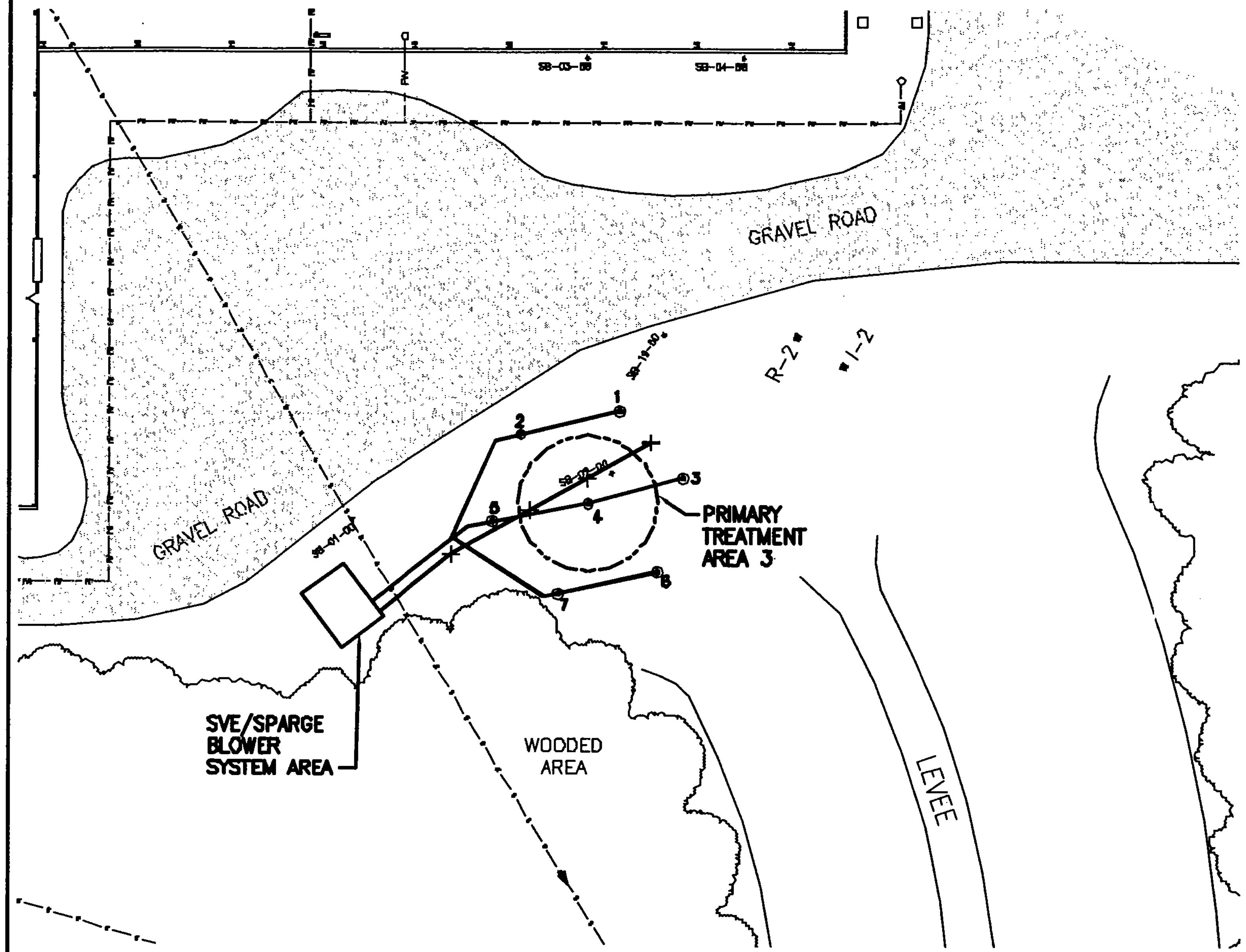
- **An analysis of the injectate.** Note that this analysis is not necessary since the injectate is ambient air. However, it will be stated in each report that ambient air was sparged into each well.
- **The volume and rate of the injected fluids**. The flow rate of ambient air from the sparge blower into the sparge wells will be periodically recorded during the month. The average flow rate for the month and duration of operation will be used to determine total volume of air injected.
- **A description of any well maintenance and rehabilitation procedures.**

- **The results of any groundwater monitoring at the site.** Currently, quarterly groundwater monitoring is conducted at the WKI facility. The results of this monitoring will be included in the monthly operating reports.

As required by DDAGW, within 120 days of completion of remedial activities at this site, all of the Class V air sparge wells will be permanently plugged and abandoned in a manner that will prevent downward migration of fluids.

APPENDIX A

DRAWINGS



NOTE:
SVE AND VENT PIPING LOCATIONS ARE APPROXIMATE AND WILL BE ADJUSTED TO ACCOMMODATE FIELD CONDITIONS.

LEGEND

—FW—	EXISTING FIRE WATER PIPING
++++++++	EXISTING RAIL LINE
—S—	EXISTING STORM SEWER PIPING
—?—	POSSIBLE PIPING
——	SVE PIPING
DS	EXISTING DOWN SPOUT
R-2	EXISTING GROUNDWATER MONITOR WELL
W-10	EXISTING RECOVERY WELL
	SOIL BORING LOCATION
+	PLANNED SPARGE WELL
•	PLANNED SOIL VAPOR EXTRACTION VENT

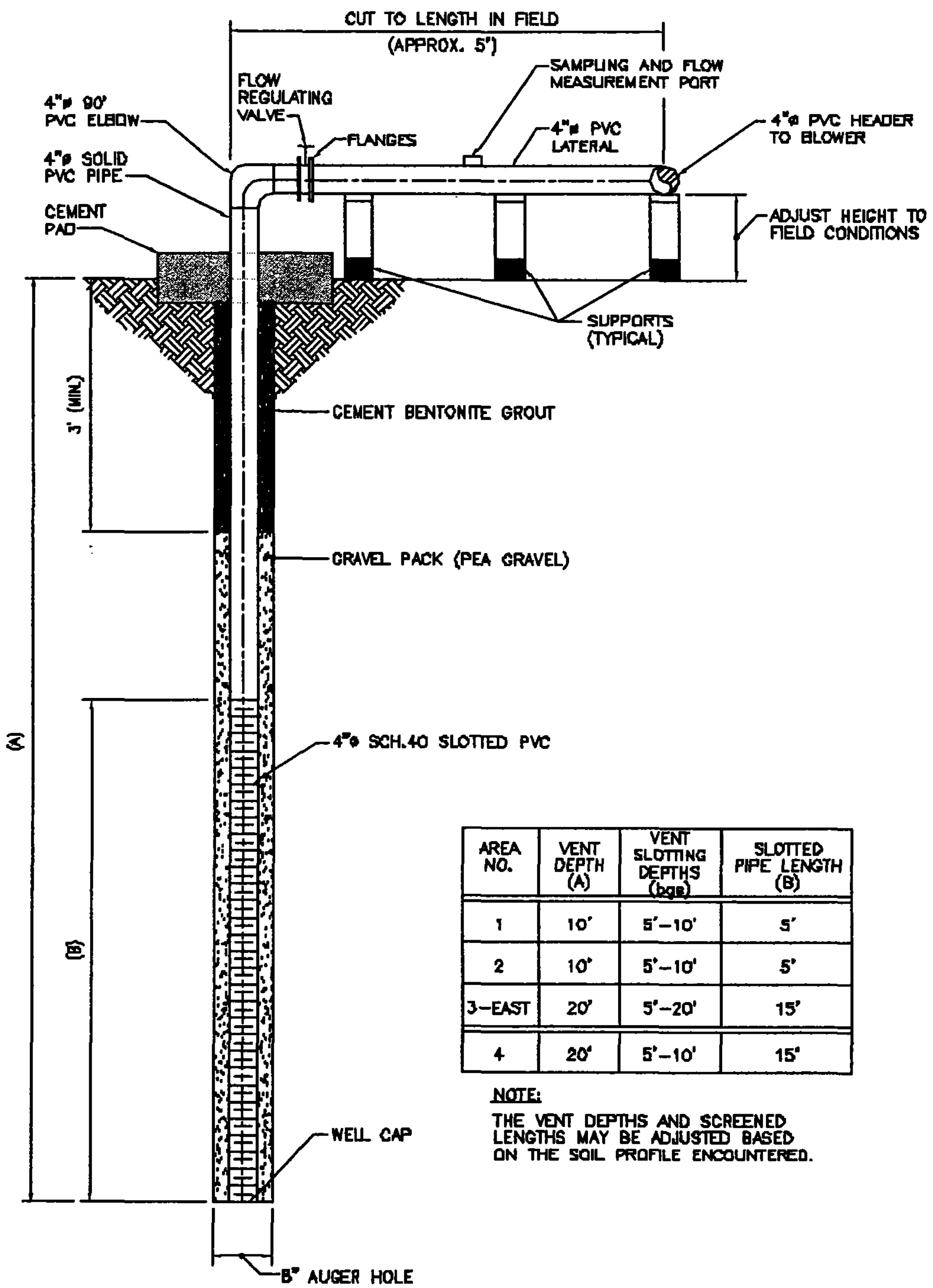
20 0 20 40
SCALE 1"=20'-0"

WORLD KITCHEN, INC.
MASSILLON, OHIO
Prepared for Wyeth, Florham Park, New Jersey

WESTON

SVE AND SPARGE SYSTEM LAYOUT
AREA 3

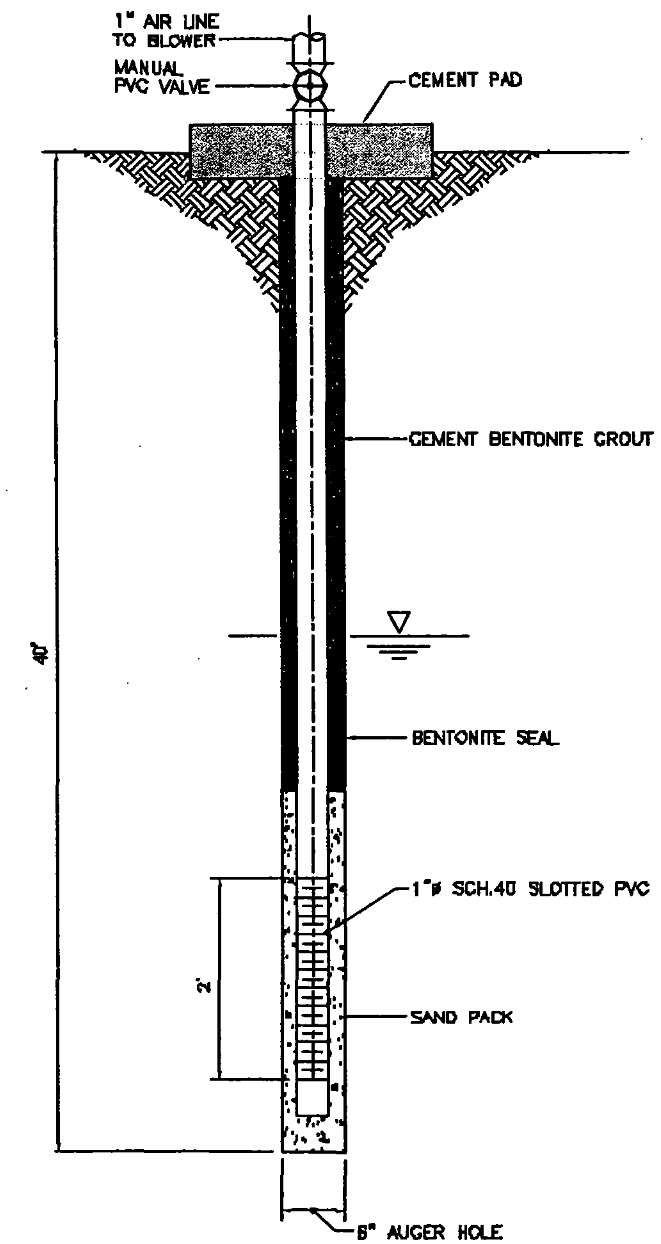
DRAWN	DATE	DWG. NO.
A.B.H.	11/4/02	103
SCALE 1"=20'-0"	W.O. NO. 02994002009005	SH. x OF x



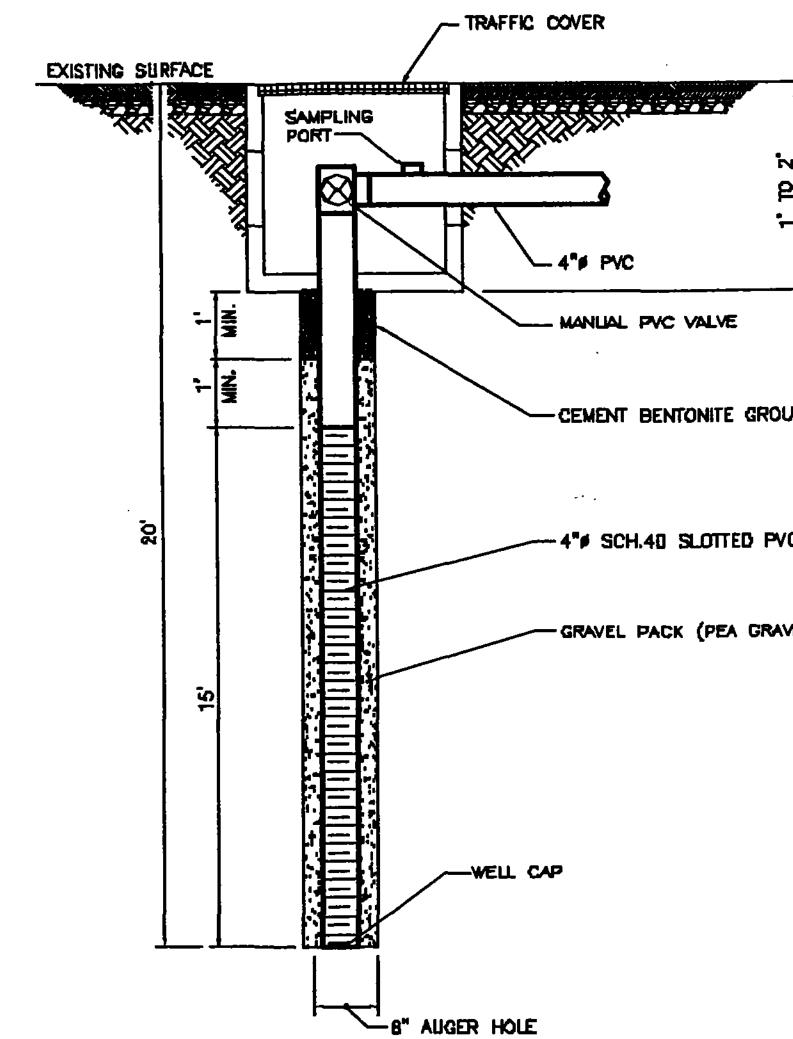
AREA NO.	VENT DEPTH (A)	VENT SLOTTING DEPTHS (bgs)	SLOTTED PIPE LENGTH (B)
1	10'	5'–10'	5'
2	10'	5'–10'	5'
3–EAST	20'	5'–20'	15'
4	20'	5'–10'	15'

NOTE:
THE VENT DEPTHS AND SCREENED LENGTHS MAY BE ADJUSTED BASED ON THE SOIL PROFILE ENCOUNTERED.

SOIL VAPOR EXTRACTION VENT (TYPICAL)
(AREAS 1, 2, & 3)
N.T.S.



AIR SPARGE WELL (TYPICAL)
(AREA 3)
N.T.S.



SOIL VAPOR EXTRACTION VENT (TYPICAL)
(AREA 4)
N.T.S.

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Prepared for Wyeth, Florham Park, New Jersey

WESTON

SVE VENT AND SPARGE WELL DETAILS

DRAWN	DATE	DWG. NO.
A.B.H.	11/4/02	104
SCALE: As shown	W.O. NO. 02994002009000005	

APPENDIX B

UNDERGROUND INJECTION CONTROL
CLASS V WELL INVENTORY FORM

Underground Injection Control Class V Well Inventory Form as Required by Rule 3745-34-13 of the Ohio Administrative Code

Date: _____

Facility Name: _____ **County:** _____

Address: _____ **Latitude of facility:** _____

_____ **Longitude of facility:** _____

Phone number: _____

Name of Owner/Operator: _____ **Name of Legal Contact:** _____

Address: _____ **Address:** _____

_____ _____

Phone number: _____ **Phone number:** _____

Well Type: _____ **Depth of Well(s):** _____ **Number of Wells:** _____

(See attached form.)

Injection System

Operating Status: active ____ inactive ____

Date of Completion of Well(s): _____

Maintenance and Inspection Schedule: _____

Nature of Fluid(s) Injected: _____

Avg Inj. Rate: _____ **Max Inj. Rate:** _____

Construction Narrative: _____

_____

Comments: _____

_____

_____

Are floor drains present? **yes** ____ **no** ____

Connected to: ☐ dry well ☐ surface discharge ☐ septic system ☐ holding tank

Comments: _____

_____

_____

If available please attach a sketch or map of site including the underground discharge system.

Please send completed form(s) to: Class V Coordinator, Division of Drinking and Ground Waters, Ohio Environmental Protection Agency, Lazarus Government Center, P.O. Box 1049, Columbus, Ohio 43216-1049